

# FLORIDA HIGHWAYS

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Vol. IV

MAY, 1927

No. 5

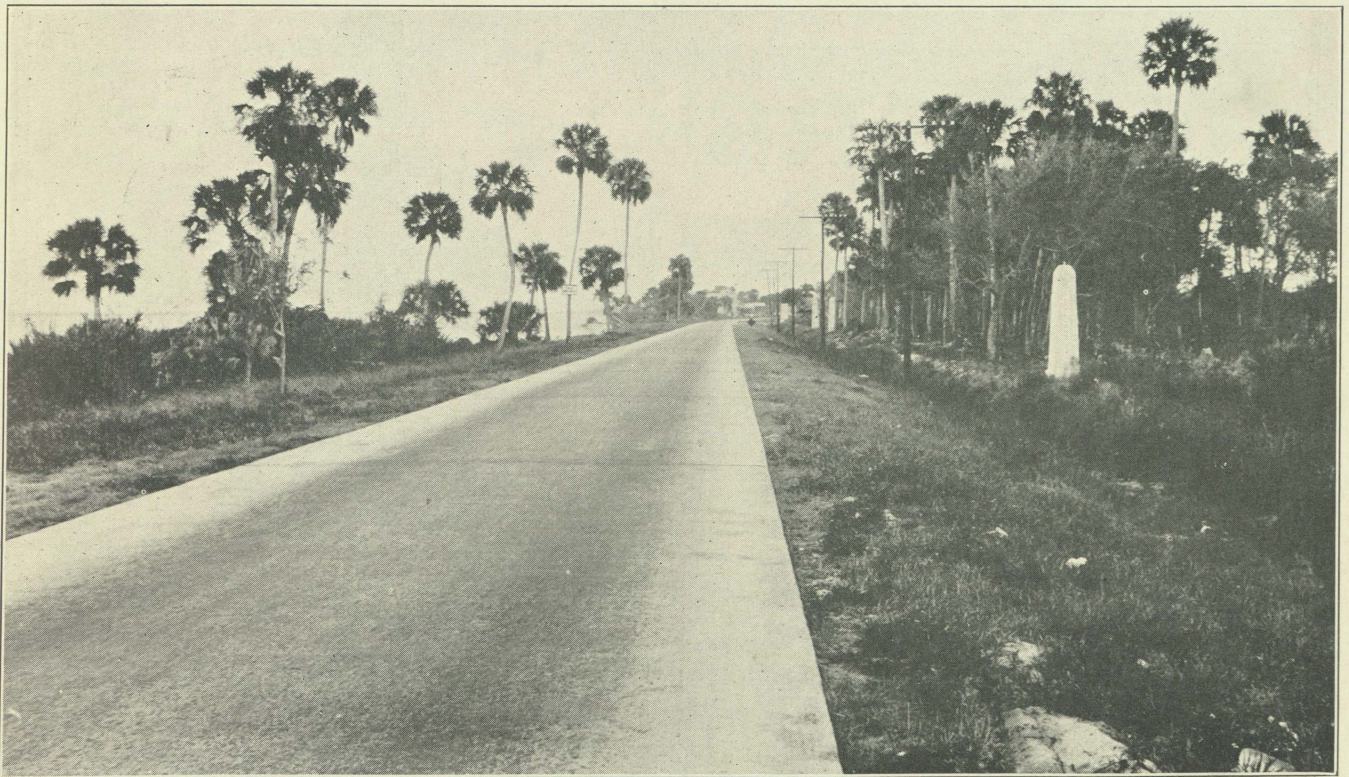
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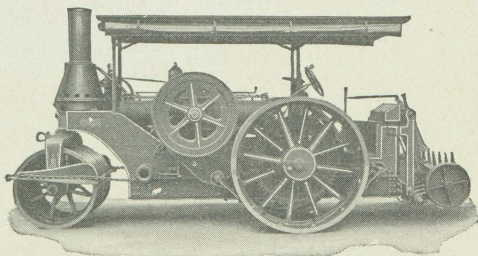
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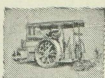
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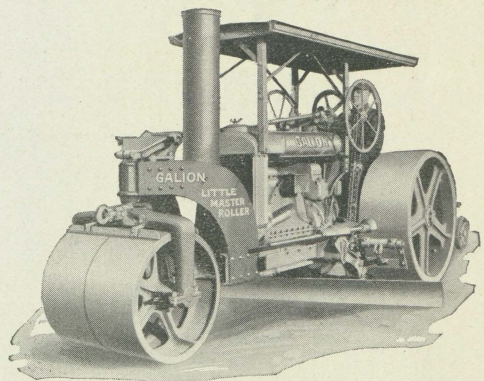
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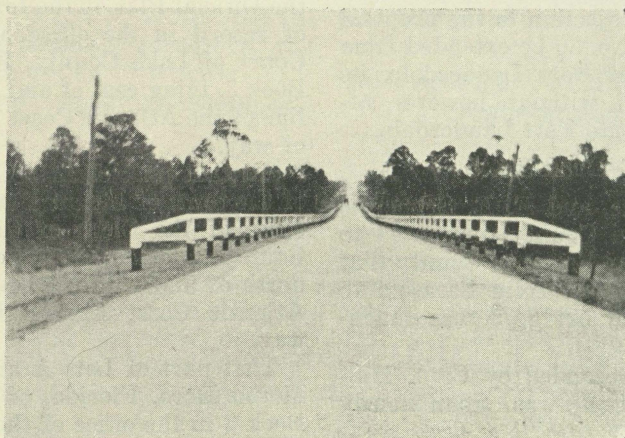
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# FLORIDA HIGHWAYS



Vol. IV

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## Transactions at a Regular Meeting of the State Road Department of Florida Held at Tallahassee, April 28, 1927

The regular quarterly meeting of the State Road Department of Florida was held in Tallahassee on the 28th day of April, A. D. 1927. The following members were present: Dr. F. A. Hathaway, Chairman, presiding; E. P. Green, Capt. W. J. Hillman, J. Harvey Bayliss and I. E. Schilling. R. E. Toms, of Montgomery, District Engineer for the U. S. Bureau of Public Roads, and J. H. Morrison of Gainesville, Federal Highway Engineer, were also present, as were also J. L. Cresap, State Highway Engineer, B. A. Meginnis, Attorney, and W. P. Bevis, Acting Secretary.

The minutes of the second quarterly meeting held at Tallahassee, January 28th, 1927, and of the budget and special meeting held in Jacksonville, March 25th, were read, and on motion of Mr. Bayliss, seconded by Mr. Schilling, were duly approved.

### Report of Chairman

The Chairman submitted his regular report of the operations of the Department since the last quarterly meeting.

### Requests to Department to Take Over for Maintenance Certain Roads

Upon motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Resolved, That the Chairman and the State Highway Engineer be and they are hereby authorized to

make an inspection of the several roads as to which requests were made by counties that same be taken over for maintenance by the Department, together with the proposed viaduct on State Road No. 1 on Enterprise Street in Jacksonville and State Road No. 23 from Bushnell north to the Marion County line, with a view to the advisability of granting the said several requests, and that they make their report and recommendations to this Department at its next meeting.

### County Road Between Punta Gorda and Arcadia

Judge W. D. Bell, Representative in the Legislature from DeSoto County, appeared before the Department and stated that he has prepared a bill to be introduced in the Legislature to designate the county road from Punta Gorda to Arcadia as a State Road, and asked that the Department give its approval to the proposal.

On motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

Resolved, That it is the sense of this Department that the Department has no objection to the inclusion of the said road in the State System.

### Road 26—Extension

Mr. W. Cecil Watson, of Miami, County Commissioner of Dade County, asked the approval of the



26 from a point west of and opposite Fort Lauderdale into Miami, without, however, changing its route into Fort Lauderdale, its present terminus.

On motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Resolved, That it is the sense of this Department that the Department has no objection to the proposal that a branch of State Road No. 26 be extended from a point opposite and west of Fort Lauderdale, its present terminus, into Miami, without, however, affecting the route of the road into Fort Lauderdale.

#### **SARASOTA COUNTY—Road No. 5**

Messrs. S. Ennis, of Venice, and F. E. Schnepfe, County Engineer of Sarasota County, presented to the Department a request from Sarasota County that the Department provide a detour from Sarasota to Venice, including a temporary bridge across Shackett Creek.

On motion of Mr. Green, seconded by Capt. Hillman, the following resolution was unanimously adopted:

Resolved, That the Chairman be and he is hereby authorized to provide the necessary detour bridge across Shackett Creek on the condition that Sarasota County shall provide the necessary road detour between Sarasota and Venice.

#### **LAKE COUNTY—Road No. 2—Right-of-Way**

On motion of Mr. Green, seconded by Mr. Bayliss, the following resolution was adopted:

Whereas, This Department has found and determined and it is hereby found and determined that it is necessary, wise and expedient to secure by eminent domain the real estate hereinafter described for the purpose of a right of way for State Road No. 2 between Tavares and the Orange County line, in Lake County, Florida, and

Whereas, There has been prepared and submitted a map or plat which shows in detail the location of said State Road No. 2, which said map or plat is hereto attached and marked exhibit "A";

Now therefore be it resolved, That the said map or plat be and the same is hereby adopted and approved as and for the location of said State Road No. 2 through Lake County, between Tavares and the Orange County line; and

Be it further resolved; That the Board of County Commissioners of Lake County be and they are hereby requested and authorized to secure for this Department by purchase or condemnation the lands necessary for a right of way for said State Road No. 2 and particularly described as follows, to-wit:

Begin at a point on the east line of the right of way of the Atlantic Coast Line Railroad Company right of way where said east line of said right of way intersects a line drawn parallel to and 85 feet south of the north line of Block 57, according to the official plat of the town of Mount Dora, Lake County, Florida, recorded in Plat Book 3 at page 37, in the office of the Clerk of the Circuit Court of Lake County, Florida, and run thence east and parallel to the north line of said Block 57 to a point 68 feet at right angles from the center line of the Atlantic Coast Line Railroad Company track; thence southeasterly parallel to the said center line of the said railroad track and 68 feet therefrom 98 feet to the

point of a curve; thence left on a curve of a 263 foot radius to the southeast corner of said Block 57; thence west on the south line of said Block 57 to the east line of said railroad right of way; thence northwesterly along the east line of said right of way to the point of beginning.

All that part of the north 85 feet of Block 57 of the Official Plat of the town of Mount Dora, Florida, of record in the office of the Clerk of the Circuit Court of Lake County, Florida, on page 37 of Plat Book 3, lying east of and within 68 feet of the center line of the Atlantic Coast Line R. R. Company's right of way.

All that part of Lots C and D of the Official Plat of the town of Mount Dora, Florida, of record in the office of the Clerk of the Circuit Court of Lake County, Florida, on page 39 of Plat Book 3; lying north of and within 68 feet of the center line of the Atlantic Coast Line Railroad Company's right of way.

That part of Lots A and B of the Official Plat of Mount Dora, Florida, of record on Page 39 in Plat Book 3 in the office of the Clerk of the Circuit Court of Lake County, Florida, lying north of and within 68 feet of the center line of the A. C. L. R. R. Co.'s right of way, less that part in the north 75 feet of Lot B.

That part of the north 75 feet of Lot B of the Official Plat of Mount Dora, Florida, of record on page 39 in Plat Book 3 in the office of the Clerk of the Circuit Court of Lake County, Florida, lying north of and within 68 feet of the center line of the A. C. L. R. R. Co.'s right of way.

Be it further resolved, That said County Commissioners be and they are hereby authorized to use the name of this department in any condemnation proceedings necessary to carry out the purposes of this resolution or to proceed in their own name as authorized by law, and

Be it further resolved, That in the event that they shall elect to proceed in the name of this Department that their attorneys be and they are hereby authorized to prepare, execute and file all necessary pleadings, affidavits and documents in connection therewith.

#### **FLAGLER COUNTY—Road No. 4—Right-of-Way**

Upon motion of Mr. Schilling, seconded by Mr. Hillman, the following resolution was unanimously adopted:

Whereas, This Department has surveyed and located State Road No. 4 in Flagler County, between Korona and the Volusia County line, as is shown by plat of said location on file in this office, and on file in the office of the Clerk of the Circuit Court of Flagler County, a copy of which is hereto attached and marked "Exhibit A," and

Whereas, Said Department has found and determined and does hereby find and determine that it is necessary, wise and expedient to secure by purchase or condemnation the lands necessary for a right of way as shown by said plat; now, therefore,

Be it resolved by the State Road Department of the State of Florida, that the County Commissioners of Flagler County, Florida, be and they are hereby requested and authorized to secure by purchase or condemnation the lands, sixty-six feet in width, necessary for a right of way for said road along the line shown on said plat.



Be it further resolved, That said County Commissioners be and they are hereby authorized to use the name of this Department in any condemnation proceedings necessary to carry out the purposes of this resolution, or to proceed in their own name as authorized by law; and

Be it further resolved, That in the event that they shall elect to proceed in the name of this Department, that their attorney be and he is hereby authorized to prepare, execute and file all necessary pleadings, affidavits and documents in connection therewith.

**HILLSBOROUGH COUNTY—Road 17—Right-of-Way**

Upon motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

Whereas, This Department has surveyed and located State Road No. 17 in Hillsborough County between the Polk County line and Tampa, as is shown by plat of said location on file in this office, and on file in the office of the Clerk of the Circuit Court of Hillsborough County, a copy of which is hereto attached and marked "Exhibit A," and

Whereas, Said Department has found and determined and does hereby find and determine that it is necessary, wise and expedient to secure by purchase or condemnation the lands necessary for a right of way as shown by said plat; now, therefore,

Be it resolved by the State Road Department of the State of Florida, That the Board of County Commissioners of Hillsborough County be, and they are hereby requested and authorized to secure by purchase or condemnation the lands, sixty-six feet in width, necessary for a right of way for said road along the line shown on said plat.

Be it further resolved, That said County Commissioners be and they are hereby authorized to use the

name of this Department in any condemnation proceedings necessary to carry out the purposes of this resolution, or to proceed in their own name as authorized by law; and

Be it further resolved, That in the event that they shall elect to proceed in the name of this Department, that their attorney be and he is hereby authorized to prepare, execute and file all necessary pleadings, affidavits and documents in connection therewith.

**SUWANNEE COUNTY—Suwannee River Scenic Highway and State Road No. 5-A**

Upon motion of Capt. Hillman, seconded by Mr. Bayliss, the following resolution was unanimously adopted:

Whereas, Suwannee County has available as the proceeds of an authorized bond issue, the sum of seven hundred and seventy-nine thousand, three hundred and seventy-two dollars and eighty-eight cents (\$779,372.88) for the purpose of constructing that portion of State Road 5-A within said county, and that portion of Suwannee River Scenic Highway within said county, and

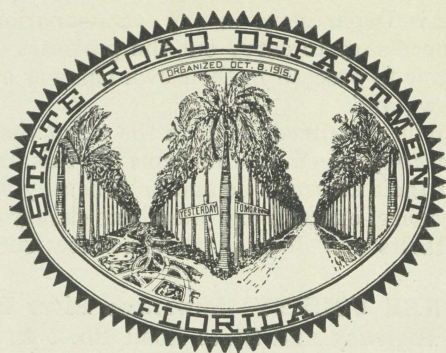
Whereas, The County Commissioners of said county, desiring to turn over the said funds to this Department to be used in the construction of said portions of said roads by and under the supervision of this Department, have agreed upon the terms of such transfer with the chairman of this Department, which said agreement has been reduced to writing and executed by said County Commissioners and by said chairman, now, therefore,

Be it resolved by the State Road Department of the State of Florida, That this Department does hereby approve, ratify and confirm the action of the chairman of this Department in entering into said agreement and in the execution of the said contract



Bridge over Manatee River between Bradenton and Palmetto on Road 5, during construction.





# Florida Highways

Published Monthly

Official Publication of the State Road Department

## PERSONNEL OF DEPARTMENT

F. A. HATHAWAY (*Jacksonville*), *Chairman*  
 (*Official Residence, Tallahassee.*)  
 E. P. GREEN, *Bradenton*  
 W. J. HILLMAN, *Live Oak*  
 J. HARVEY BAYLISS, *Pensacola*  
 I. E. SCHILLING, *Miami*  
 WALTER P. BEVIS, *Tallahassee*, *Acting Secretary.*

## PERSONNEL OF EMPLOYEES IN GENERAL CHARGE OF THE WORK OF THE DEPARTMENT

### Engineering Division

J. L. Cresap, Tallahassee.....State Highway Engineer  
 L. K. Cannon, Tallahassee.....Ass't. State Highway Engineer  
 G. L. Derrick, Tallahassee.....Bridge Engineer  
 C. W. DeGinther, Tallahassee.....Ass't. Bridge Engineer  
 Harvey A. Hall, Gainesville.....Testing Engineer  
 F. W. Berry, Jr., Tallahassee.....Office Engineer  
 John R. Stewart, Gainesville.....Supt. of Equipment  
 R. L. Bannerman, Marianna.....Div. Engr.—1st Div.  
 Counties—Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf,  
 Holmes, Jackson, Jefferson, Leon, Liberty, Okaloosa, Santa  
 Rosa, Wakulla, Walton, Washington.  
 J. H. Dowling, Lake City.....Div. Engr.—2nd Div.  
 Counties—Baker, Bradford, Clay, Columbia, Dixie, Duval, Hamil-  
 ton, Lafayette, Madison, Nassau, St. Johns, Suwannee, Taylor,  
 Union.  
 R. J. Cassie, Fort Pierce.....Div. Engr.—3rd Div.  
 Counties—Brevard, Indian River, Martin, Okeechobee, St. Lucie.  
 L. B. Thrasher, Ocala.....Div. Engr.—4th Div.  
 Counties—Alachua, Citrus, Lake, Levy, Gilchrist, Marion, Putnam,  
 Seminole, Sumter, Flagler, Volusia.  
 A. W. Kinney, Lakeland.....Div. Engr.—5th Div.  
 Counties—Hernando, Hillsborough, Manatee, Orange, Osceola,  
 Pasco, Pinellas, Polk.  
 R. C. Fergus, Fort Lauderdale.....Div. Engr.—6th Div.  
 Counties—Broward, Dade, Monroe, Palm Beach.  
 Henry Wilson, Punta Gorda.....Div. Engr.—7th Div.  
 Counties—Charlotte, Collier, DeSoto, Glades, Hardee, Hendry,  
 Highlands, Lee, Sarasota.

### Accounting Division

S. L. Walters, Tallahassee.....Accountant

\* B. A. Meginniss, Attorney for the Department,  
 Editor and Business Manager

Volume IV

May, 1927

Number 5

which is in the words and figures following, to-wit:

This agreement, made and entered into this the 15th day of April, A. D. 1927, by and between the County of Suwannee and State of Florida, acting by and through the Board of County Commissioners of said county, party of the first part, and the State Road Department of the State of Florida, acting by and through the chairman thereof, party of the second part, witnesseth:

Whereas, Suwannee County has available as the proceeds of an authorized bond issue, the sum of seven hundred and seventy-nine thousand three hundred seventy-two dollars and eighty-eight cents (\$779,372.88) for the purpose of constructing that portion of State Road 5-A within said county and that portion of Suwannee River Scenic Highway within said county, and

Whereas, It is the desire of said Suwannee County that the construction of said portions of said roads shall be done by the State Road Department and that said funds shall be expended for said purposes by the State Road Department in the construction thereon of an eighteen-foot wide surface treated lime rock base in accordance with the standard specifications of said State Road Department, and

Whereas, The State Road Department has signified its willingness to construct said portions of said roads and to expend the said funds in the construction thereon of a surface treated lime rock base in accordance with said Department's standard specifications, and to commence said work as soon as said funds are made available, the necessary plans therefor made and the necessary rights of way therefor secured, now, therefore,

This agreement witnesseth: That the said County of Suwannee agrees to and with the said State Road Department that it will turn over the said funds, which are now on deposit in three banks in said Suwannee County, to said State Road Department, to be used in the construction of said portions of said roads in the following manner, that is to say: To cause the said funds to be transferred in said banks to the credit of and in the name of the State Road Department of the State of Florida, provided, that such banks, and each of them, shall immediately furnish to said State Road Department deposit of collateral security in the form of state, municipal or county bonds securing said deposit of funds, or a good and sufficient surety company depository bond, to be approved by said Department, in a sum sufficient to secure the said respective deposits; and provided further, that such banks, and each of them, shall add to the sum so deposited in the name of the State Road Department the full amount of the interest agreed to be paid to the county on said funds from the date of the original deposit therein, and shall, from the date of the transfer of said funds to the credit of the State Road Department pay three per cent interest on average daily deposits, all such interest to be added to and become a part of the funds so transferred and to be used for the purposes aforesaid.

It is further agreed that if said banks shall decline to immediately meet the conditions herein imposed that then said County of Suwannee agrees to and with said Department that it will cause the whole of said funds, principal and interest to be paid into the State Treasury of the State of Florida to the





Project 529—Road 1—Looking East from bridge; plain cement concrete.

credit of said State Road Department for use in the construction of said portions of said roads, it being understood that said State Road Department assumes and has no responsibility for said funds until it has received full security covering said deposit as herein outlined.

And said County of Suwannee does further agree to and with said State Road Department that it will at once secure and turn over to said State Road Department the rights of way necessary for the portions of said roads and without cost or expense to said Department except as is hereinafter provided.

And the State Road Department of the State of Florida does hereby agree to and with said Suwannee County as follows, to-wit:

1. That it will use, expend and employ the said funds so received and deposited solely and only to the construction of said portions of said roads by the construction thereon of a surface treated lime rock base eighteen feet wide, according to the standard specifications of said Department.

2. That it will commence the actual construction thereof as soon as said funds shall have been made available, right of way secured and turned over, and necessary plans prepared, and that such actual construction shall be commenced not later than July 1st, 1927, upon those projects as to which the right of way has been secured and the necessary plans prepared, and provided said funds shall have been made available as hereinbefore outlined.

3. That except for failure to make said funds available or to secure necessary rights of way, or other providential causes or causes beyond the control of said State Road Department, it agrees to finish the construction of such surface treated lime rock base on said portions of said roads not later than December 31st, 1928.

4. That if and when it shall become necessary to condemn any tract or tracts of land to provide the

necessary right of way, the said Department will pay, out of the funds so turned over and transferred to it, the amount of the award or awards in such condemnation suit or suits, together with the necessary attorney's fees; and that if and when it shall become necessary to remove from the right of way buildings or other obstructions, the said Department shall with its own forces, or out of the proceeds so transferred and made available be responsible for the removal thereof, or for the actual and necessary cost of the removal thereof in a workmanlike manner.

It is mutually agreed and understood that the transfer of funds as provided herein shall be effected and completed within thirty days from the date of this agreement.

In witness whereof, the parties hereto have caused this instrument to be duly executed in duplicate, this the 15th day of April, A. D. 1927.

THE COUNTY OF SUWANNEE,  
STATE OF FLORIDA,

By.....  
Chairman.

.....  
.....  
.....

As and constituting the Board  
of County Commissioners of  
Suwannee County, Florida.

Attest:

.....  
Clerk of Said Board.

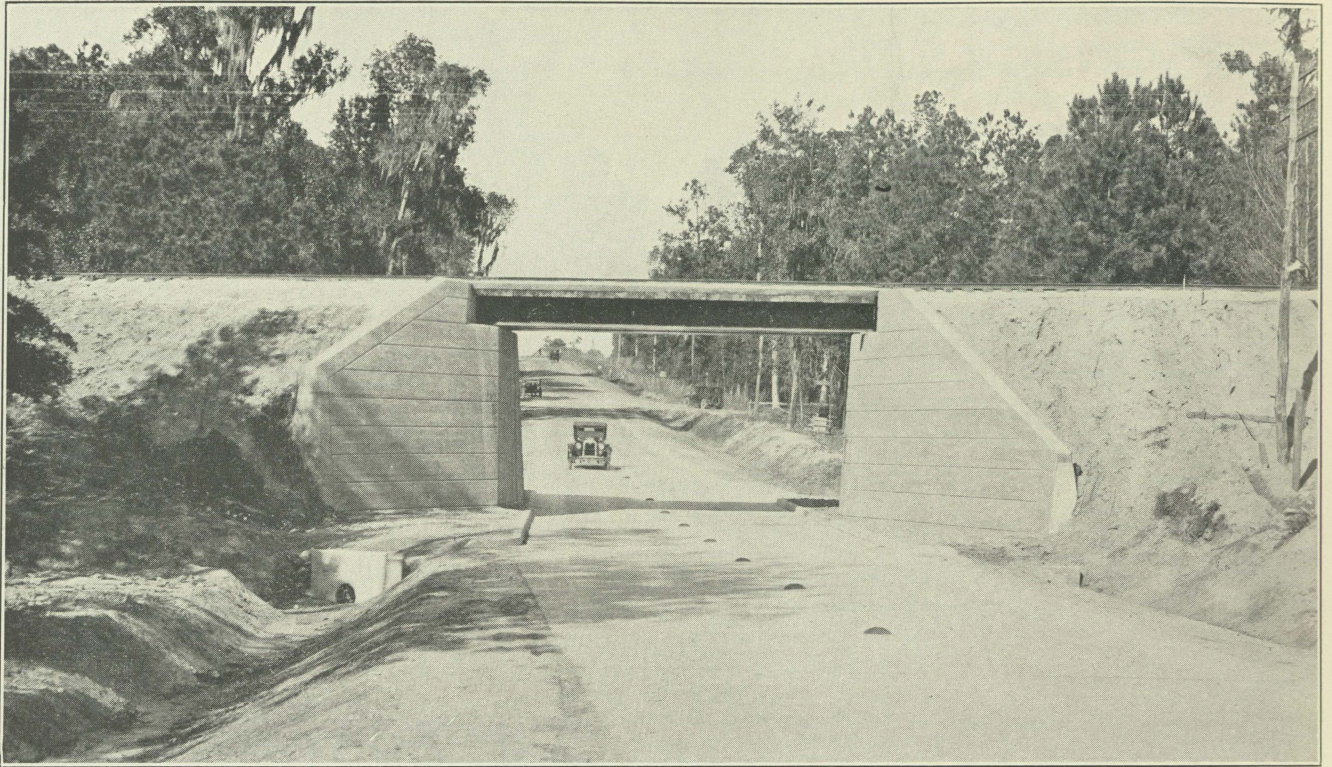
THE STATE ROAD DEPARTMENT  
OF THE STATE OF FLORIDA,

By.....  
Chairman.

Attest:

.....  
Acting Secretary.





Underpass on Road 2, just south of Ocala.

#### **Road No. 24—OSCEOLA COUNTY**

Upon motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Whereas, Road No. 24 forms a part of the Federal Seven Per Cent System of Florida; and

Whereas, The State Road Department is desirous of obtaining Federal funds to aid in the construction of that portion of Road No. 24 from Kissimmee to the Brevard County line in Osceola County; now, therefore, be it

Resolved, That the Chairman is hereby authorized to submit plans and specifications to the Bureau of Public Roads and make application for Federal Aid for said project; and the Department does hereby pledge that necessary funds will be provided by said Department for meeting Federal Aid on said proposed Federal Aid Project; and be it further

Resolved, That the State Highway Engineer be and he is hereby directed to commence the construction of said road as soon as all necessary plans are completed.

#### **Road No. 4—FLAGLER AND VOLUSIA COUNTIES**

Upon motion of Mr. Schilling, seconded by Mr. Bayliss, the following resolution was unanimously adopted:

Whereas, Road No. 4 forms a part of the Federal Seven Per Cent System of Florida; and

Whereas, The State Road Department is desirous of obtaining Federal funds to aid in the construction of that portion of Road No. 4 from Korona to Rose Bay in Flagler and Volusia Counties; now, therefore, be it

Resolved, That the Chairman is hereby authorized to submit plans and specifications to the Bureau of Public Roads and make application for Federal Aid

for said project; and the Department does hereby pledge that necessary funds will be provided by said Department for meeting Federal Aid on said proposed Federal Aid Project; and be it further

Resolved, That the State Highway Engineer be and he is hereby directed to commence the construction of said road as soon as all necessary plans are completed.

#### **Road No. 1—GADSDEN COUNTY**

Upon motion of Mr. Bayliss, seconded by Capt. Hillman, the following resolution was unanimously adopted:

Whereas, Road No. 1 forms a part of the Federal Seven Per Cent System of Florida; and

Whereas, The State Road Department is desirous of obtaining Federal Funds to aid in the construction of that portion of Road No. 1 from Quincy to the Apalachicola River in Gadsden County; now, therefore, be it

Resolved, That the Chairman is hereby authorized to submit plans and specifications to the Bureau of Public Roads and make application for Federal Aid for said project; and the Department does hereby pledge that necessary funds will be provided by said Department for meeting Federal Aid on said proposed Federal Aid Project; and be it further

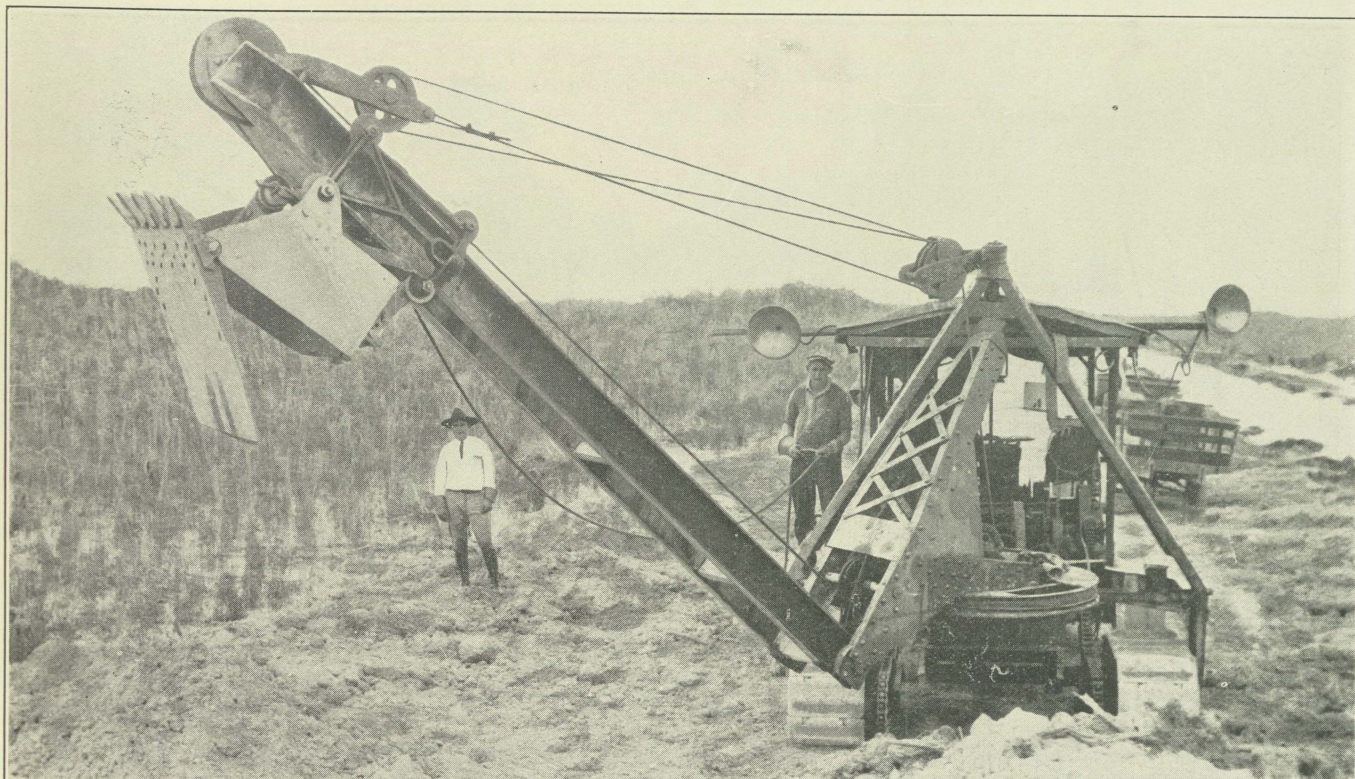
Resolved, That the State Highway Engineer be and he is hereby directed to commence the construction of said road as soon as all necessary plans are completed.

#### **ALACHUA COUNTY—Road 14—Right-of-Way**

On motion of Mr. Hillman, seconded by Mr. Green, the following resolution was adopted:

Whereas, This Department has surveyed and located State Road No. 14 in Alachua county between Gainesville and the Putnam County line, as is shown by plat of said location on file in this office, and on file in the office of the Clerk of the Circuit Court of





Project 669-V—Collier County—Road 27 (Tamiami Trail), operating skimmer scoop.

Alachua County, a copy of which is hereto attached and marked "Exhibit A," and

Whereas, Said Department has found and determined and does hereby find and determine that it is necessary, wise and expedient to secure by purchase or condemnation the lands necessary for a right of way as shown by said plat; now, therefore, be it

Resolved by the State Road Department of the State of Florida, That the Board of Bond Trustees of Special Road and Bridge District No. 1 of Alachua County, Florida, be and they are hereby requested and authorized to secure by purchase or condemnation the lands necessary for said right of way for said road along the line shown on said plat.

Be it further Resolved, That said Trustees be and they are hereby authorized to use the name of this Department in any condemnation proceedings necessary to carry out the purposes of this resolution, or to proceed in their own name as authorized by law; and

Be it further resolved, That in the event that they shall elect to proceed in the name of this Department, that their attorney be and he is hereby authorized to prepare, execute and file all necessary pleadings, affidavits and documents in connection therewith.

#### **Award of Contracts Approved**

On motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

Whereas, Bids were asked by the Department for the construction of the projects hereinafter designated; and

Whereas, The firms respectively named were low bidders thereon; now, therefore, be it

Resolved, That the action of the Chairman in awarding and executing the contracts hereinafter named, be and the same is hereby approved and con-

firmed, which said contracts are as follows, to-wit:

Project 747, Road 43, Jefferson County, clearing, grubbing and grading, contract awarded to Finlayson & Morris, \$38,878.90.

Project 669-E, Road 27, Dade County, clearing and grading, contract awarded to Alexander, Ramsey & Kerr, \$187,000.00.

#### **Apalachian Scenic Highway**

A communication from the State Highway Board of Georgia requesting the Department to petition the Bureau of Public Roads to designate the Apalachian Scenic Highway through Florida as Federal Route No. 19, was received and read.

On motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

Resolved, That the Bureau of Public Roads be, and it is hereby, requested to make what is known as the Apalachian Scenic Highway through Georgia and Florida as Federal Route No. 19.

#### **Adoption of Budget**

On motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

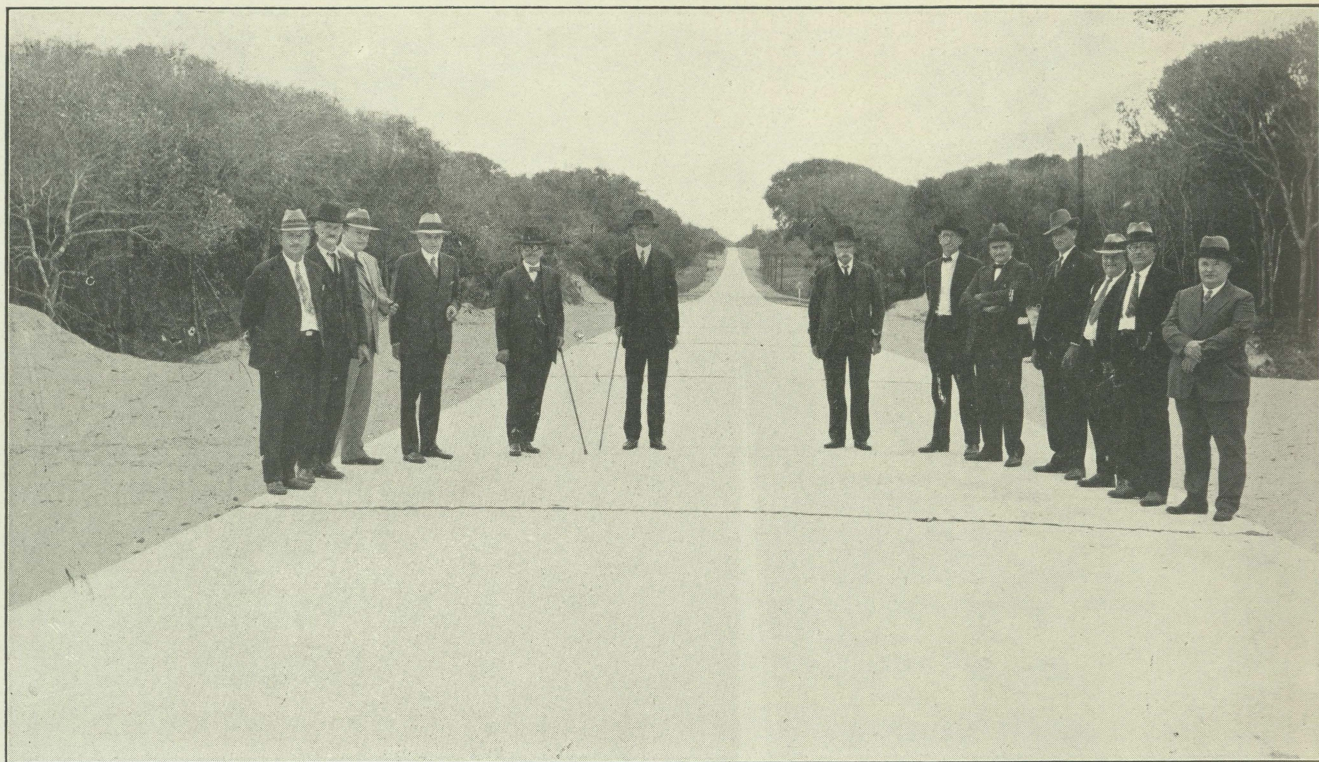
Be it resolved, That the tentative budget of maintenance and construction work for the year 1927 as previously submitted, together with the additions thereto as made by resolution at the meeting of the Department held in Jacksonville, March 25th, be and the same is hereby approved and adopted as the permanent budget of the Department for the year 1927.

#### **Members' Expense Accounts**

On motion of Mr. Schilling, seconded by Captain Hillman, the expense accounts of the members were approved and ordered paid.

There appearing no further business, the Department was adjourned.



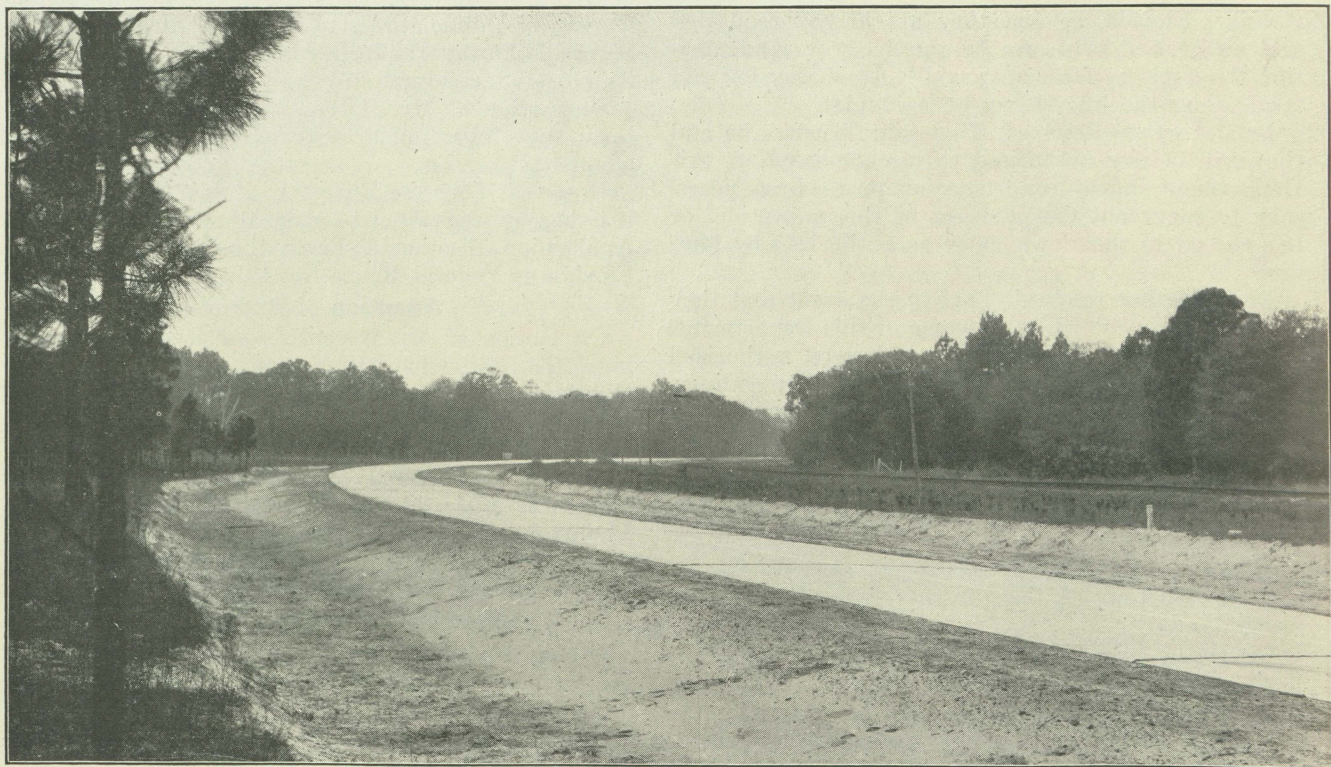


## Concrete Road From Yulee To Fernandina

We present herewith three views of the splendid concrete highway from Yulee to Fernandina recently constructed and opened to traffic. This road was built by Nassau County, and is a high type concrete road. It connects with State Road No. 3 at Yulee,

giving a fine paved road from Fernandina to Jacksonville.

The photograph of persons on the highway shows the County Commissioners and other officials of Nassau County and the contractor making an inspection of the new road.







Another view of concrete road described on preceding page.

## Cresap-Bower

**T**HE FOLLOWING CLIPPING from the Daily Democrat of April 15th will be of interest to the many friends of James L. Cresap, State Highway Engineer. Mr. Cresap has been connected with the State Road Department since 1917, and since 1923 has been State Highway Engineer. During his long professional career he has made a host of friends not only in Florida, but throughout the nation:

The home of Dr. and Mrs. F. Clifton Moor on North Monroe Street was the scene of a beautiful wedding, Thursday the fourteenth of April, at high noon, when Mrs. Mary Russell Bower became the bride of Mr. James L. Cresap. The wedding was characterized by quiet dignity and simplicity and was witnessed by the closest friends of the bridal couple. The ceremony was performed by the Rev. D. J. Blackwell, pastor of the First Presbyterian church of Quincy.

Mrs. Joseph A. Edmondson, violinist and Miss Ella Scoble Opperman, at the piano, rendered a program of beautiful wedding music preceding the ceremony. They also rendered the wedding march from Lohengrin, as a processional and during the ceremony "Love's Greeting," by Elgar was softly played.

The spacious home was opened en suite and a charming spring-like atmosphere was suggested by the arrangement of larkspur, in the pastel shades, and graceful festoons of southern smilax. An improvised altar of greenery and white roses was arranged in the living room, and on each side were tall candelabra with white tapers. The tapers were lighted by Misses Sarah and Catherine Love, cousins of the bridegroom.

The bride was attended by two dainty flower girls, Miss Sarah Moor, winsome little daughter of Dr. and Mrs. F. C. Moor, and by Miss Irene Bruns, lovely

daughter of Mr. and Mrs. J. H. Bruns. The little maids wore lovely crepe de chine frocks in pastel shades, the one in pink and the other in blue, and they carried French baskets of larkspur. The bride made a beautiful picture in her wedding costume, a compose tailleur in soft shades of tan flat crepe, with which she wore a modish long cloth coat of the same shade. Her smart hat and other accessories were of harmonizing tones and she carried an artistic arm bouquet of nun lilies and maiden hair fern.

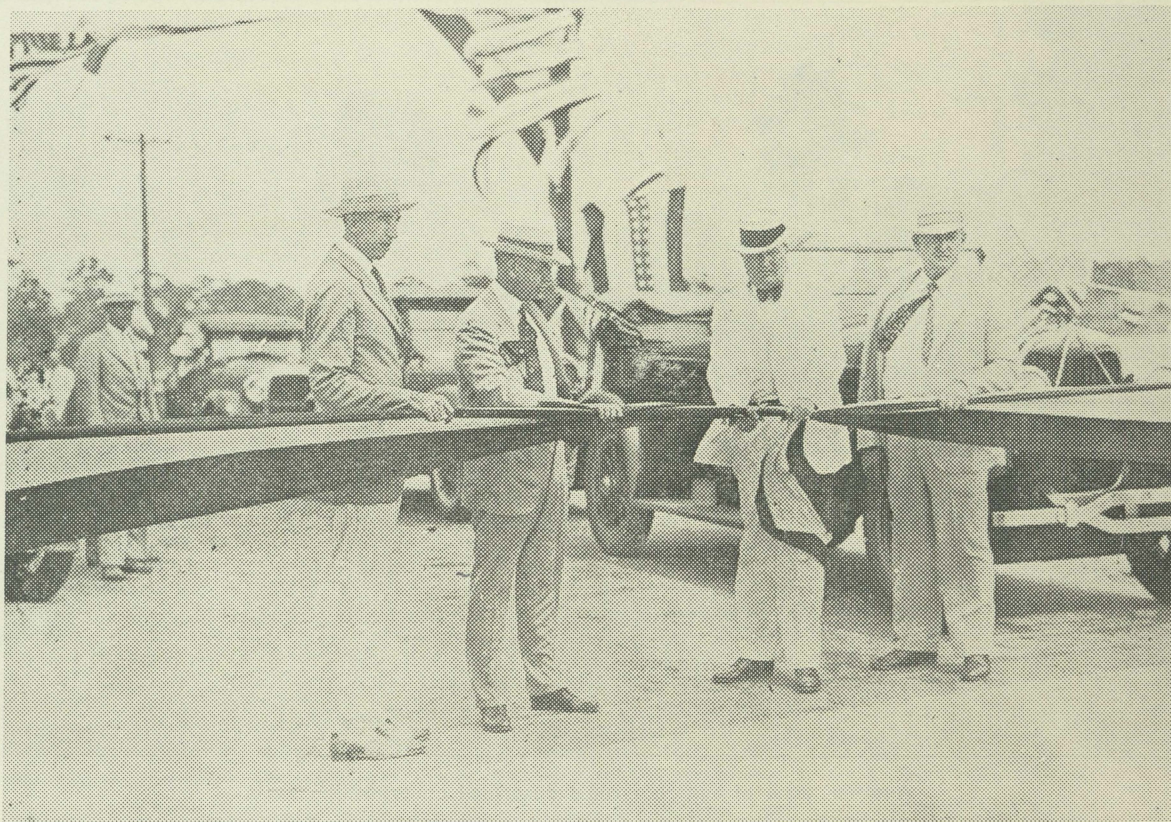
Immediately after the ceremony the bridal couple departed on their wedding journey, a motor trip to points in south Florida. Mrs. Cresap is a daughter of the late Captain Benjamin E. Russell, of Bainbridge, Georgia, a beloved and noble statesman and patriot. Captain Russell was cited for distinguished service in the Confederate army, and after the war his career was marked by one brilliant achievement after another. He was a member of the fifty-third and the fifty-fourth congress and held many other offices of prominence.

Mr. Cresap is a native of Tennessee but has made Tallahassee his home for a number of years. He is State Highway Engineer and in point of service is the oldest official of the present state road department. Mr. Cresap has had an enviable career in his profession and has held many positions of honor and trust in Tennessee and Virginia. In 1917 he was made resident engineer, superintendent of convict labor and assistant highway engineer in Florida. His efficient, conscientious service enabled him to climb steadily to his present position of State Highway Engineer, which he has held for the last two years.

Upon their return to Tallahassee, Mr. and Mrs. Cresap will be at home to their friends in their beautiful home on East Virginia street, which was just

(Continued on Page 12)





This photograph was taken on the occasion of the opening this month of the Sarasota Beach bridge, and shows Dr. F. A. Hathaway, chairman of the State Road Department, cutting the cord which opened the bridge to traffic. The opening was attended with appropriate ceremonies, Dr. Hathaway being invited to make the principal address. Those shown in the photograph from left to right are: Lewis Lancaster, chairman of the Sarasota county board of commissioners; E. P. Green of Bradenton, member of the State Road Department; Dr. Hathaway, and Guy M. Hagen, member of the board of county commissioners of Sarasota County.

The bridge is a unit in the county road system, but the chairman of the State Road Department was invited to be present and make the principal address.

## Washington First In Road Building

**G**EORGE WASHINGTON, "First in war, first in peace, and first in the hearts of his countrymen," may also be appropriately called the first among American road builders. Besides being an exceptionally accurate surveyor and engineer, Washington saw the value of roads as a means of promoting national unity. When the settlements began to spread west of the Alleghanies, he gave much thought to the improvement of the avenues of communication between the east and the west. He foresaw the danger of internal strife unless there was free and easy communication between all parts of the young republic.

Washington took up the study of surveying at fourteen and at sixteen he was engaged to survey the estate of Lord Fairfax. At eighteen he was appointed public surveyor for the province of Virginia. His diary, from 1748, when he began surveying, until his death, is full of references to road building. The following are a few samples:

Feb. 27, 1768. "Laid a road from Mt. Vernon to the Lain by Mr. Manley's."

Mar. 14, 1768. "With the people working upon the new road between breakfast and dinner."

Mar. 23, 1768. "Rid out to see and examine whether a road could not be discovd and opened from Posey's ferry back of Muddy Hole Planta, thereby

avoiding the Gumspring which I think may be done to advantage."

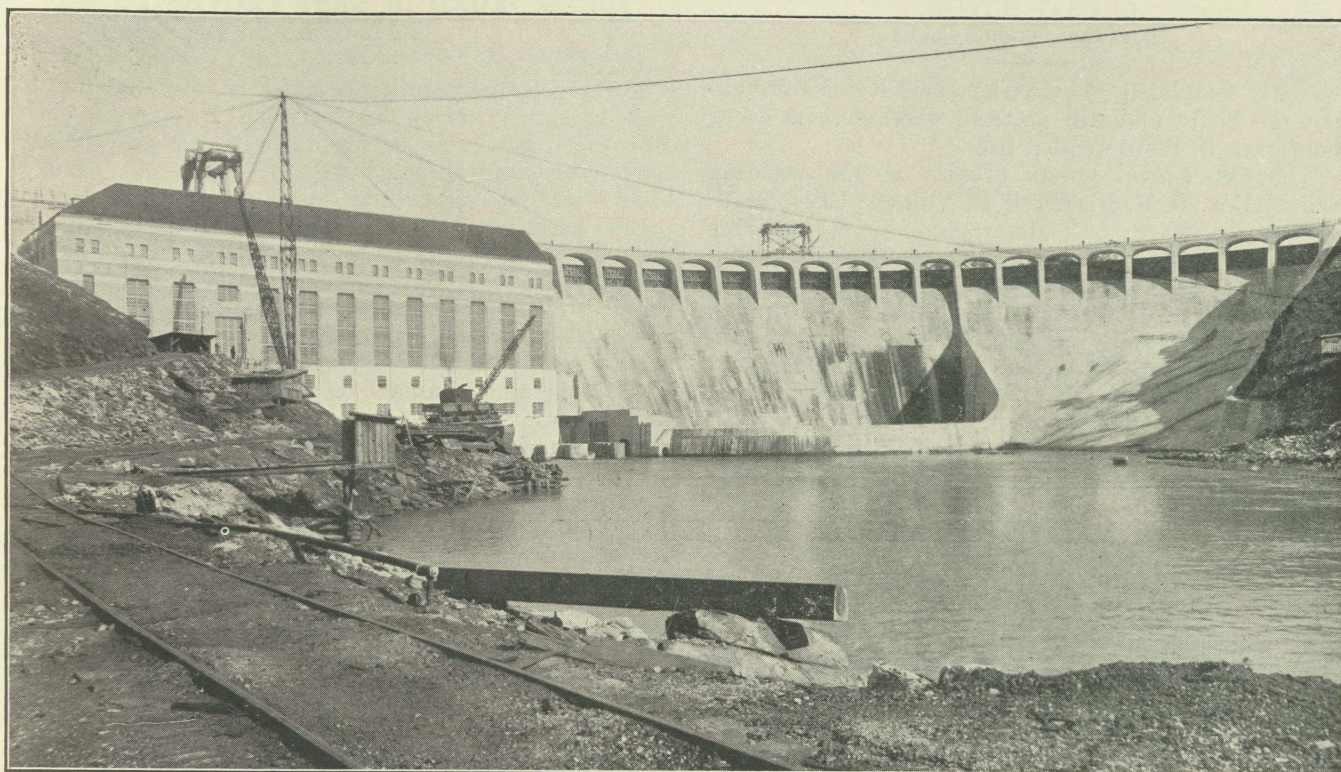
Aug. 18, 1786. "Rid to the Plantation at the Ferry, Dogue run, and Muddy Hole, and to the Mill. The hands at each place working on the Public roads."

Nov. 13, 1786. "Began survey of the road leading from my ferry to Cameron."

Washington mapped out and recommended the general route of the Cumberland road. Actual construction was not begun until 1811 and the road, known as the national pike, was extended step by step, to Wheeling, Columbus and later to Indianapolis. The invention of the locomotive, however, made road building a purely local affair until the automobile came into general use. Now the national pike is part of "U. S. Route No. 40," extending from Atlantic City through Cumberland, Indianapolis, St. Louis, Kansas City and Denver to San Francisco.

That Washington was right in his views on the value of roads as a means of preventing internal strife is confirmed by the statement frequently made by students of government today, who say that "if we had had good roads and as much travel between the North and the South in 1860 as we have today, there never would have been any Civil War."—Wyoming Roads.





## Martin Dam of Alabama Power Company

The above photograph shows a great project of Southern construction which, although not connected with Highway work, involved in its construction operations many features familiar and of interest to highway engineers and contractors.

It is the Martin Dam of the Alabama Power Company, located at Cherokee Bluffs, Alabama, on the Tallapoosa River about 40 miles north of Montgomery, and just completed. It has a developed capacity of 135,000 horse power. The dam is 1900 feet wide; of this 1244 feet is solid concrete, the balance an earth dike on the east side. At the highest point the dam is 190 feet high.

The point of particular interest to highway engineers and contractors is that a new American

record for construction progress was made in its building. The forces of the Dixie Construction Company of Birmingham, who handled the big project, averaged 1,000 cubic yards of concrete per day over a period of more than twelve months. During the peak months concrete construction went as high as 45,000 cubic yards. This is a record that has not been equalled or surpassed, so far as is known.

Arrowhead sand and gravel produced by the Montgomery Gravel Company, to whom we are indebted for the photograph, were used in both the mass and reinforced concrete sections. In all a total of 10,194 solid earloads were delivered. End to end, this would make a solid train 67 miles long, or if the concrete had been put in a 16-foot highway it would extend more than 435 miles.

The witness for the defense had been long and earnestly impressed with the necessity of telling the truth, the whole truth, and nothing but the truth while on the stand. It was with much fear and anxiety that he at last faced the lawyer for the prosecution.

"And now," said the barrister impressively, "did you see this man come through the door?"

The witness considered the question carefully. At last he replied slowly, "Well, no, sir. He didn't come through the door, but I believe he came in the doorway."—Northwestern Purple Parrot.

Chocolate Bar: What am dese here dark specks in dis here oatmeal?

Dusky Man: Keep youh coat buttoned. Dem dark specks in dat dar oatmeal am dese here things dey call calories.—Middlebury Blue Baboon.

### LIFE—A QUESTION

By CORINNE ROOSEVELT ROBINSON.

Life? And worth living?  
 Yes, with each part of us—  
 Hurt of us, help of us, hope of us, heart of us,  
 Life is worth living.  
 Ah! With the whole of us,  
 Will of us, brain of us, senses and soul of us,  
 Is life worth living?  
 Aye, with the best of us,  
 Heights of us, depths of us—  
 Life is the test of us!

(Copyright by Charles Scribner's Sons.)

### The Gentlemanly Flapper

In Japan you can tell if a girl is single or married by looking at her hair. In America you can't even tell if it's a girl.—Judge.



**CRESAP-BOWER**

(Continued from Page 9)

recently completed. Their friends are legion throughout the South and will unite in wishing them every happiness in their wedded life.

The out-of-town guests present at the wedding were: Rev. D. F. Blackwell, of Quincy; Capt. W. J. Hillman, of Live Oak; Misses Sarah and Catherine Love, of Murphreesboro, Tenn., and the following from Bainbridge: Mrs. Albert Russell, Miss Georgia Fleming, Mr. Will Fleming, Mr. and Mrs. Frank S. Jones, Mrs. John Donaldson, Mrs. Earle Donaldson, Miss Amelia Donaldson, Miss Flora Krause, Mr. and Mrs. Troupe Hines, Judge W. V. Custer, Mr. Vance Custer, Mr. and Mrs. Marshall Mayes and Miss Frances Mayes.

**"IDEAL" ROAD IN EAST PROVES TO BE FAILURE**

Nothing better than motoring illustrates the point that humanity rarely knows when it is well off. How often has every driver wished for a marvelous stretch of highway built without any cross roads, blind driveways and dangerous curves, without appreciating that it might be the very thing he wants least of all?

In the East there is a 45-mile road built like a railway. A nominal fee is charged to enter its right of way. There are no speed laws—nothing, in fact, to annoy one. And yet it is not a success. One could be ditched and stranded on this road and no one would know it until it was too late to be of assistance.—Michigan Roads and Pavements.

**Defining the Lowest Responsible Bidder**

By **RALPH L. WARREN**  
Vice President, Warren Bros. Co.

**I**N private contracts the owner may and the wise one generally does attempt to eliminate the irresponsible bidder by not inviting him to bid or through consideration of all the factors in determining who is the lowest bidder.

In the letting of public contracts, the elimination is much more difficult. The laws under which most public officials are required to act provide that contracts must be let after advertisement for competitive bids to the "lowest bidder," "lowest best bidder" or "lowest responsible bidder" or some similar term. The purpose of these laws is to prevent the public officials from exercising favoritism or personal preference at the expense of the community. The courts everywhere have construed these various terms for "lowest responsible bidder" to mean substantially the same thing. No court has undertaken to define the terms "lowest bidder," "lowest reasonable bidder," "lowest responsible bidder" or "best lowest bidder" to mean exclusively the cheapest price at which the proposed improvement is offered.

It is absolutely essential that some authority, after bids are received, shall determine which bid is in fact the "lowest" after taking into consideration the price bid, the quality of the article bid upon, its durability and suitability for the purpose for which it is offered, and the financial responsibility and moral integrity of the party making the bid. All of these different requisites must be carefully considered by some authority before it is possible to determine which bid is in fact the "lowest" (all things considered) for the improvement proposed to be made. The relative importance to be attached to each of these requisites must differ in every instance.

Possibly one of the clearest statements of the law upon this subject is the recent decision by the Supreme Court of Pennsylvania in the case of Hibbs v. Arnsberh, 119 Atlantic 727, wherein the court says:

"The term lowest responsible bidder does not mean the lowest bidder in dollars; nor does it mean the board may capriciously select a higher bidder regardless of responsibility or cost. What the law requires is the exercise of a sound discretion by the directors.

"They should call to their assistance the means of

information at hand to form an intelligent judgment. They should investigate the bidders to learn their financial standing, reputation, experience, resources, facilities, judgment and efficiency as builders. This was not done. The court below censures the board for omitting this important step, but it holds, inasmuch as they had ample knowledge of the successful bidder and the merits of his work, the contract could be awarded. This might do in private affairs, but will not pass when public funds are at stake; it is not the exercise of discretion. Though the directors were not bound in law to give the contract to the lowest bidder who might be irresponsible, they were bound to investigate, and if a bidder measured up to the law requirements as a responsible party, the board could not capriciously award the contract to another. Giving a bond alone does not make up for responsibility; we have too many bonding companies willing to indemnify anything. But there should be a sufficient reason where the bidder is lowest and responsible why the job was not given to him, and where such reason appears the action of the board is generally conclusive."

Similarly in *People vs. Kent*, 43 N. E. 760, the Supreme Court of Illinois said:

"As applied to a bidder who proposes to undertake the performance of the stipulations and conditions of such a contract as this, we regard the term 'lowest responsible bidder' as including the ability to respond by the discharge of his obligations in accordance with what may be expected or demanded under the terms of the contract. \* \* \* And we think that the added requirement that the bidder shall be responsible has a broader meaning than the mere financial ability to respond in damages which is provided for by the bond."

In *Williams vs. City of Topeka*, 118 Pac. 864, the Supreme Court of Kansas held:

"We conclude the word 'responsible' in the phrase 'lowest responsible bidder' was used by the Legislature in the sense in which it had long been interpreted by the court and text writers and must be held to imply skill, judgment and integrity necessary to the faithful performance of the contract as well as sufficient financial resources and ability."

Other similar decisions might be quoted.





Project 630—Road 8—West of Brighton.

While the law undoubtedly gives public officials power to exercise a sound discretion in selecting the "lowest responsible bidder" and such discretion in the absence of fraud will be sustained by the courts, there are many officials who will award public contracts to the lowest bidder in dollars, knowing him to be irresponsible, rather than subject themselves to the charges of favoritism which frequently accompany an award to a responsible bidder whose bid is higher in dollars than the lowest. Some officials make it a practice where the lowest bidder is irresponsible to dodge their responsibility of selection by rejecting all bids and readvertising, a course which is most unfair to all responsible bidders.

The public desires that honest work and material go into public contracts; demands that contracts shall be completed on time and in full compliance with the letter and spirit of the contract. Only a responsible contractor can fill these requirements. As stated by Max O'Brien, Assistant Attorney-General of Iowa, in an article in the *Constructor*, entitled "The Public's View of Contract Bonds":

"An irresponsible bidder upon a public improvement is a menace not only to contractors who are responsible and to surety companies, but to the body politic as well."

Also—

"The public interests are much better promoted by a faithful performance than by repairs or indemnity for defective work."—Highway Engineer and Contractor.

Marriage License Clerk: But lady, the law requires that I record all previous marriages before issuing a new license.

Movie Actress: Good Heavens! And I've a taxi waiting outside!—Goblin.

## BARGAIN

### 12 Inch and Gravel Dredge Equipment

300 H. P. 3 phase motor

New Leather Belt

12" AMSCO Pump

Electric Hoisting and Swinging Engine

Complete outfit ready to use. May be inspected in operation.

P. O. Box 1142, Montgomery, Alabama

## Alabama Sand & Gravel Co.

L. L. IDINGS,  
Assistant to President

"We 'ave matins at our church."

"That's nothing. We have linoleum up the aisle at ours."—Stanford Chaparral.



## Responsibility of the Highway Engineer for Safety of Traffic

By E. W. JAMES, at Michigan State Conference, February 18, 1927

(From Michigan Roads and Pavements)

WHEN an engineer builds a structure intended for the use of the public his responsibility for safety in the use of that structure does not seem to me to involve a very fine point in professional ethics, but quite the reverse. His responsibility for the safe use of the structure within certain limits appears rather obvious. This same kind of question involving the integrity of professional work has been raised and answered, at least by implication, in many professions and in many ways. Doctors of medicine and surgeons are held responsible within practical limits of their professions for errors of malpractice or carelessness in prescribing or operating. In connection with steamboat and steamship construction and operation there is a variety of responsibility recognized by the courts, in Government regulations and inspection service. Rules governing the determination of the position of the Plymsoil mark are established and loading rules are in force under practically every national steamship registration. Standards for boiler construction and inspection service are established by governments and measures for the safety and health of crews and passengers on ocean steamships are provided for either in the navigation laws or in suitable regulations of practically every nation. Laws covering the details of industrial insurance provide for safety devices in manufacturing plants and requirements of boards of health control the operating conditions in a great many hazardous industries. There are mine regulations for the operations underground, and perhaps the most conspicuous instances of measures provided for public safety are those in connection with railway and public utility operations. Violations of proper standards in any of these lines is frequently followed by recognition in the courts of the right of the sufferer to substantial damages.

These conditions represent the crystallization of public opinion on the side of safety and however careless of human life and of property we may appear to be from the pages of the daily press, there is no doubt that the law and the courts are also generally on the side of safety and the guarantee of safety. The weight of opinion and the dictates of ethics are both against the man who plans or operates a dangerous device for public use.

The work of the highway engineer has never been so flagrantly at fault that is has aroused any generally hostile public opinion, except possibly in a few scattered local cases of no great prominence. But the work of the highway engineer has during the last 15 years risen to such a place of importance that it now furnishes service which may be compared conservatively in magnitude and importance with that furnished by steamship lines, river steamers, railroads and other public utility corporations. The demands made upon the highway engineer are increasing more rapidly than they ever increased in the case of these other services, and if he is to keep abreast of the demands and satisfactorily meet the requirements which the public is justified in expecting, he must take special cognizance of his responsibility for the safety of that public in all the details of his work. He must recognize that roads originally designed for the convenience of the pedestrian, the

pack horse and the relatively slow-moving horse-drawn vehicles, are now continuously traversed by heavy and rapid motor traffic operated by all sorts and conditions of men.

The operators of motor vehicles are the general public and the variety of ability of motor and mental reactions, and in the equation of personal judgment, is almost without limit. The equipment which the highway engineer furnishes is going to be used in a considerable measure by the unskilled as well as the skilled and the devices he builds should be equipped with every possible detail for the assurance of safety.

Right here a limiting distinction must be made in defense of the highway engineer that flows directly from the fact that unskilled and improper use of a highway may obviously be made by a careless driver. We must always distinguish between the proper and suitable use of the road and the contributory negligence that flows from any other use.

I recall an interesting circumstance that I once discovered in an important county of a Southern State. The county roads were in bad condition and the bridges were in worse condition. In certain inspections which I had to make I discovered loose and broken floor boards. In a few cases single floor boards were entirely gone. In one instance a tension member in the lower chord of a truss was so nearly rusted through that I snapped it by swinging on it with my weight. In another case an entire lower panel connection was broken so that the entire truss had sagged sufficiently to be visible to the eye. The roads were constructed with deep, straight-cut ditches that would wreck any vehicle slipping into them and practically the best surfaces on the roads were sand-clay so slippery in wet weather that it was difficult for the driver of an automobile to stay in the center of the road. Conditions were so promising for accidents that I asked the county judge how often they had accidents and whether the county suffered severely because of damage claims supported by the courts. He told me that they had a clever county attorney and rarely had any damages to pay. He said the attorney was always able to prove contributory negligence and his best argument was that the people of the county knew how bad the roads and bridges were and if they got into trouble and had an accident in the face of this knowledge it was their own fault.

Today the traffic on our highways is by no means confined to those who know the road. Boundaries of a county used to confine a large per cent of the traffic; now the boundaries of a State are by no means wide enough to set limits to something like ten or fifteen per cent of the annual traffic on our highways. In designing and constructing roads the highway engineer has many details to consider which, if neglected, may introduce serious danger. The first in order of consideration are those involved in alignment both horizontal and vertical. Horizontal alignment involves curvature and, especially in high-class construction, the greatest care should be exercised in designing such details. There was a time in our early history of railroading when it was believed that trains could not be operated if there were curves in the line, but the engineer now has considerable



latitude in his choice of details and the wise exercise of that choice can do much to make the road safe for normal use. With motor traffic operating at 30 miles an hour or higher speeds no engineer can be excused for using flat, narrow or sharp curvature in his road design, and it is encouraging to see that easement, widening and superelevation are included more widely in current practice year by year. These are mathematical details of design subject to exact treatment, and an effort is now being made to standardize practice as far as possible for these features.

Vertical alignment involves gradients and vertical curves and the details of these elements of the roads are of the greatest importance to safety. Vertical curves may be so designed as to produce very dangerous points on the highway because of shortened vision and long, steep grades may lead the unwary driver into a serious accident. The reduction of curvature and grades entirely aside from the element of economy involved should be made the general rule of practice and exercised under all possible conditions.

In view of the constantly increasing traffic the width of surface may also be an element of danger. We sometimes forget that our old 14 and 15-foot roads were built for horse-drawn traffic that operated at a speed of six miles per hour or less that did not require an especially quick eye or exact judgment of distance to pass another vehicle. Today momentary loss of control may result when a fast moving car passes another and the driver miscalculates his clearance and slips one front wheel off a hard pavement into a soft or loose shoulder.

The Hoover Conference on Street and Highway Safety recently recommended a width of ten feet for each lane of traffic and this requires a minimum width of 20 feet for a two-way road. The engineer who designs his road too narrow in the face of existing condition opens himself to serious criticism and responsibility for accidents.

Another feature of our highways which are elements of danger are the junctions and intersections that occur so frequently. Our highway network is everywhere in the east and central states a finely woven fabric, and there are highway intersections in many States at every mile and frequently at the half and quarter section points. Besides these junctions and intersections with other routes there are intersections with railroads and with streams. These latter involve some of our most expensive work and are rapidly coming to represent some of our most advanced practice.

With respect to railroad intersections, the grade crossing will doubtless always be with us except on main roads of the first importance. Figured on the basis of chance and measured in terms of human life there may be a reasonable doubt whether we should ever undertake the general elimination of all railroad grade crossings, but there can be no question that eventually on all main roads intersecting main railroad lines, public safety will demand the elimination or adequate protection of practically every railroad and highway intersection. The work so far done in this line is gratifying. On the Federal aid system alone there have been eliminated approximately 1,800 grade crossings and the number where watchmen or automatic protection has been installed is very much greater. The engineer who recognizes his responsibility to the public should cast the weight of his influence with every reasonable provision for grade elimination programs and when he is entrusted

with the task of designing such an elimination he should be sure that his remedy is safer than the condition he seeks to correct.

It is astonishing what suggestions have been made for the elimination of danger at railroad grade crossings. A request was once received at the Bureau of Public Roads that we compute for the inquirer the necessary height and length of a hump or "thank-you-mam" to be built into a pavement with the purpose of throwing a vehicle which approached a railroad crossing at a greater speed than 30 miles an hour. The chances of death in such a man-trap were so great that we questioned the sanity of the person who had proposed it as a solution for grade crossing dangers. We have had a variety of designs submitted to us involving sudden stops or short circuitous curves planned to force a slow speed of approach to grade crossings. Obviously, the total hazard to all traffic in any such device is much greater than the hazard of meeting a train at the crossing. In practically all of our Eastern States the density of traffic is such that grade crossing elimination will no doubt be rapidly speeded up in the near future. New York State has recently authorized \$300,000,000, in bonds for this work and the programs in the vicinity of large cities are more and more encouraging each season.

At our stream intersections we build bridges. Some of these are standing as the finest monuments to our highway engineers. Our standards of practice with respect to bridge construction are perhaps more nearly abreast of current demands than almost any other details of our work. To be sure there are many old structures existing which have come down to us from a past which represent very much lower demands of traffic than the present, but the amount of first-class new work which is being done represents a very large percentage of the total. The part failure of a bridge can be so little distinguished from its total failure that there has been little difficulty in securing adequate strength, but there are other details promoting safety which must not be overlooked, such as width, clearance, suitable approaches and substantial guards to the traveled way. The omission of felloe guards should never be permitted. These are too valuable a protection both to the bridge structure itself and to the traveler. The width of bridge floor between curbs or felloe guards should never be less than the approaching pavement and the approaches should be direct and with easy gradients. These all represent elements of safety which highway and bridge engineers must recognize if they are alive to their responsibilities.

Junctions with other highways constitute points of danger and in some instances the conditions are so serious as to demand special and expensive treatment. It is probable that there will be an increasing number of highway grade crossing eliminations. In the work now projected around New York a considerable number of these are proposed. Others exist in Washington, Chicago, St. Louis and San Francisco. Some have been introduced as convenient adjustments to meet the existing topography, but others are outright construction for the purpose of increasing the efficiency of densely traveled highways and insuring a high degree of safety. Such eliminations will undoubtedly be encouraged as a measure of economy. When we consider two intersecting highways carrying traffic to full capacity, the interruption due to the alternate stoppage of traffic reduces the com-



bined efficiency of those highways at least 50 per cent. With increasing traffic we shall find ourselves much encouraged in eliminating highway grade crossings for the sake of safety.

The engineering details of highway grade crossing elimination have not received a great deal of study and the best designs have undoubtedly not yet been produced. There are certain principles in this work which must be recognized in a thoroughly satisfactory layout. Complete access must be given from each lane of traffic in one intersecting route to both of the lanes of traffic in the other intersecting route. This must be done without introducing any additional intersecting lines of traffic; without fouling any line of traffic; with due care that each traffic lane is relieved of the departing traffic before additional congestion is created by entering traffic. A few studies along this line have already been made in the Bureau of Public Roads, but no actual case of highway grade separation has yet permitted the application of these principles.

Where highways intersect at grade and the expense of such grade separation is prohibitive, the introduction of the roundpoint or rotary intersection offers a solution of considerable advantage. Again we are without adequate or sufficient data for a study of rotary intersection design. The controlling details appear to be the radius of the interior circular parking, or possibly the radius of the center line of the circular pavement; the relation of the width of pavement in the circle to the sum of the widths of the radiating roads; and of course the amount of traffic and its distribution with respect to peak traffic on the intersecting routes and at different hours.

From observations in the city of Washington in a number of circular intersections, some carrying as high as ten radiating streets, it appears that the shorter the radius the lower the capacity of the circle, other details remaining the same. The theoretical width of pavement in the circle should be 25 percent of the sum of the widths of all radiating roads, but for the reason that we do not find all of the radiating roads carrying peak traffic at the same time, circles with considerably less than the theoretical width of pavement appear to carry radiating traffic without congestion.

An engineer's responsibility for making the highways safe for traffic does not cease by any means when he has incorporated into his design every possible detail toward this end. He must see that the execution of the work is so carried out that the surface itself in its finally completed condition will be as safe as possible. His incentive to this end is not merely the safety of traffic but also the integrity and protection of the road surface, and in going to considerable expense for safety's sake he finds himself justified by a resulting pavement of greater durability and consequent longer life. It is essential first that the finished condition of the surface be regular; that it be free from inequalities; a wavy condition or any unevenness that will tend to start undue vibration in a traveling motor vehicle. The serious effects of such vibration have been disclosed by our impact studies and it behooves the engineer who conscientiously seeks to construct a satisfactory and safe pavement to adopt such methods of construction and such refined tests for the finishing of a pavement surface as will permit driving at any legal speed without danger to the vehicle and without risking serious damage to the

pavement. However difficult it may be to secure contractors capable of properly finishing a pavement and disposed to give this detail the proper attention, the engineer can hardly give this matter too close attention or insist too strongly on satisfactory results. The test for regularity of surface which is now being written into most of the standard state specifications requires that when a straight edge is laid longitudinally on the surface no depression shall be greater than one-sixteenth of an inch per foot measured to the nearest point of contact of the straight edge. This condition can be obtained by careful work on concrete, brick and mixed bituminous tops. It is more difficult to obtain on bituminous macadam, but it is not thought that the condition is too rigid even for this type. A pavement as smooth as this requirement produces will practically eliminate any danger of losing control of a car, driving at any reasonable speed, and likewise practically eliminates undesirable impact due to heavy trucking.

It is highly desirable also that pavements have as great a continuity as possible. This applies not only to the general character of surface but also to width and condition. It is at once seen that to meet this requirement will involve most of our highway departments in a considerable amount of reconditioning and reconstruction of old pavements. It must be recognized, however, that this matter involves the entire highway program both with respect to financing and the location of work, but its importance is such that the Bureau of Public Roads is now seriously considering taking active steps to induce the States to give this matter more careful thought and take advantage of that clause of the Federal Highway Act which provides aid for reconstruction. It is inevitable that continuity of type can not be secured and, in the selection of types, should not be secured for economic reasons, but it emphasizes the need of proper care where dissimilar types join, and relatively better maintenance on those types which are less durable in order that the general character of the surface may be kept reasonably uniform.

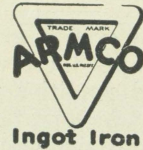
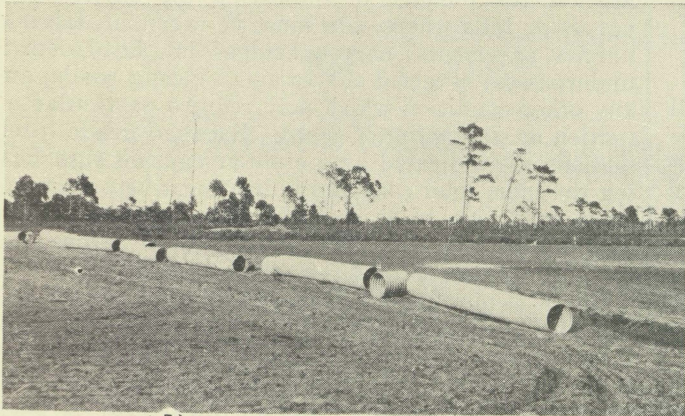
It is essential also that pavements be selected and constructed with the point of view of reducing slipperiness to the lowest possible degree. In dry weather practically any modern pavement furnishes a satisfactory surface from the point of view of traction and the coefficient of friction is so high that we experience little difficulty, but in wet weather or in cold weather when sleet or ice forms on the pavement conditions may become exceedingly dangerous. The presence of foreign matter on the surface, especially clay or leaves, makes the pavement exceedingly slippery, but so far it has been impossible to take care of these details satisfactorily through the usual maintenance operations. The engineer, however, can reduce the danger by keeping the crown of his pavements as low as possible, at the same time securing adequate drainage, and by proper selection of types on grades exceeding five per cent.

Recently, some investigations have been undertaken to develop the changes in the coefficient of friction due to the wet condition of the pavement surface but these studies have not yet advanced to a point where conclusions may be safely drawn.

It is obvious from what has been said in this paper that these desirable conditions of design and construction can not everywhere be secured at once. In

(Continued on Page 18)





## ARMCO, of course!

When 150 feet of 18" Armco Culvert was laid in this small creek at Venice, Florida, the work took about one-sixth the time that would have been needed to install rigid type of pipe—and the engineers knew they were installing the culvert of greatest permanency.

For strength, long life and low cost, use ARMCO for road culverts

For Information, Write

**DIXIE CULVERT & METAL COMPANY**  
JACKSONVILLE, FLORIDA

Jack Camp, President. E. F. Fitch, Vice-President. Clarence Camp, Sec. and Treas.

## CAMP CONCRETE ROCK COMPANY

Jacksonville Ocala Tampa

Producers of High Grade Washed, Crushed  
and Sized

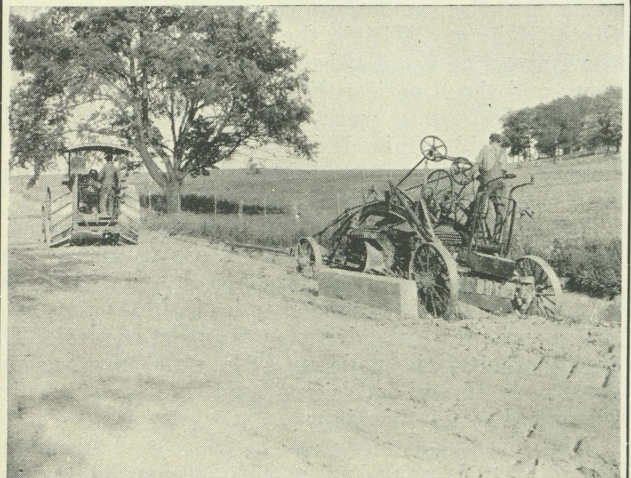
## CONCRETE ROCK

"Camp Quality"

Capacity 1,500 to 2,000 tons daily. Quarry, Camp, Florida, Hernando County, on the Atlantic Coast Line Railroad. Our product has been approved for all structural concrete and bituminous macadam.

**C. W. STONE, Sales Manager**

Sales Offices: 1011 Bisbee Bldg., Jacksonville, Fla.  
Room 212, Allied Bldg., 112 Cass St., Tampa, Fla.



### DOWN COME OPERATING COSTS

The new telescopic axle, combined with leaning wheels, will cut your operating costs.

Now get these facts:

The telescopic axle—

- (1) Will extend farther than the longest one-piece axle.
- (2) Will contract closer than the shortest one-piece axle.
- (3) Each side works independent of the other.
- (4) This is all done while in motion and from the operator's platform.

We sincerely believe we have made the greatest of graders by adding this feature.

This grader has been given the toughest jobs and never disappointed a user. A broad statement, but true.

Remember! We will bring down operating costs—and will prove it. In the meantime, let us send you a catalog.

**The Austin-Western Road Machinery Co.**

400 N. Michigan Ave.

Chicago, Ill.



## RESPONSIBILITY OF THE HIGHWAY ENGINEER FOR SAFETY OF TRAFFIC

(Continued from Page 16)

every State highway system, even in a system so small as 1,000 or 1,200 miles there will for many years be sections in too good condition to warrant reconstruction, but which contain curvature, gradient, and other details which are unsatisfactory. So long as these exist and so long as the public has a disposition to contribute negligence in the use of the highway there is another duty of the highway engineer which I must finally describe as an essential part of his work in making the highway safe. This is the use of proper warning signs, which will inform the traveling public of the conditions to be met on the highway.

For years to come we will have grades somewhere that are so steep as to demand cautious driving. There will be curves where the line of sight is too short; there will be bridges too narrow; underpasses that are low and crooked; lack of continuity in the surface that produces points of danger, and grades which, though not unduly steep, are so long as to threaten serious heating of brakes and possible loss of control by a driver.

Practically every State has recognized the need for such precautions to the traveling public, but the matter has never until comparatively recently received systematic attention. The work of the Joint Board on Interstate Highways and the action recently taken by the Association of State Highway Officials has now produced for the use of the States a standardized series of warning and caution signs that deserves the attention of every State highway department. The designs for these signs have been very carefully studied, and their shapes, size and visibility have been determined after careful work by a number of co-operating agencies, among which are the Association of State Highway Officials, the Bureau of Public Roads, the Bureau of Standards, the General Electric Company and the American Engineering Standards Committee. Important work was done by several of the States, notably Ohio, Indiana and Illinois, and it is believed that the general scheme has been worked out in a satisfactory and very practical manner.

In developing these signs a number of definite principles have been followed. These comprise a definite color code, a definite shape, a printed legend and where possible a symbol to indicate the nature of the hazard which the driver may expect to meet. The series of signs is made up of a number of groups known as directional signs, caution signs, warning signs and restrictive signs.

The directional signs are in white and black rectangular in shape and are used to inform the traveler of his location and of the distance and direction to other points. The caution signs have a yellow background with black legend or symbol. The square caution sign is used to indicate hazards which are not inherent in the road itself, but which are intermittent or which may come upon the road from an outside source. Such signs are used to indicate the presence of cross roads, schools, churches, hospitals, etc., where the car should be brought sufficiently under control to permit of an almost immediate stop, if necessary.

The second degree of caution is indicated by a diamond shaped sign which is a square mounted with the diagonal in a vertical position. This sign is used to indicate conditions inherent in the road itself which demand caution on the part of the driver and is the sign which will be most commonly used. Such signs

are for the purpose of indicating the existence of curves or hills where care must be taken in driving; narrow pavements; narrow bridges, low headroom at underpasses; reversed curves and winding roads, and any other condition which may require particular attention or slackening of speed. Railroad grade intersections are indicated by a circular caution sign having the same color code and indicating whether one or more tracks are to be crossed. Finally an octagonal sign is used to indicate the need to stop before proceeding further.

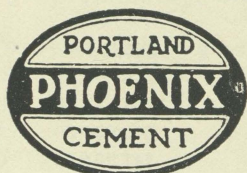
There is now in preparation a Manual which will soon be available covering the use and erection of these signs and by following it the several States can develop a system of highway making which will be uniform throughout the country regardless of state or county lines. Already over forty States have indicated their intention of adopting this series of signs for a selected group of roads and the simplicity of the system is such that the public will very soon learn the significance of the signs and will know that they are everywhere used under the same conditions for the same purpose. The uniformity of the scheme is one of its greatest points of value. The signs act as instructions to the traveling public and when instructions are given everywhere alike in the same terms, the effect produced will be as strong as it can be made by any practicable system. The constant repetition of the same instructions will have its psychological effect on the driver and he will find himself almost unconsciously responding to the reaction produced by the warning or caution sign. If he can not read and is color blind, he still has the shape of the sign and in some cases the symbol to indicate the nature of the hazard. If every road could be built at once without any points of danger and if every driver would drive carefully it might be possible to dispense with the use of any warnings or instructions to be cautious, but until that time comes there will always be a need for a system of road marking such as that provided in this series of signs.

The Association of State Highway Officials has undertaken to introduce these signs on a comparatively limited mileage of highways, hoping by this means to secure an extension of their use eventually to a much greater mileage of State and Federal aid roads. Already many counties and towns have taken steps to introduce the signs and approximately 10,000 working drawings of the designs have been supplied to the States, manufacturers and others interested in their use. A Sectional Committee of the American Engineering Standards Committee is now working on the general problem of introducing uniformity in city markers of all kinds including pavement markings and luminous signals. This committee has indicated its purpose to adopt this same system of marking for city use, using probably a sign of smaller size which will have sufficient visibility on city streets and park roads.

A careful consideration of this system of marking is strongly recommended to every highway engineer whether he is engaged in State, county or city work, and every engineer who is alive to his responsibilities as a public servant furnishing a utility for the general use of the traveling public will include this feature of highway safety in his bill of materials and estimate for a road project. The engineer must realize that his responsibility extends to every detail of design, construction and operation and should leave no step untaken that will increase the safety of the highway which he builds.



For  
*Perfect Concrete*  
USE



Standard since 1898

Manufactured By

**Phoenix Portland Cement Corp.**

Plant

Phoenixville } Birmingham  
Bessemer district } Ala.

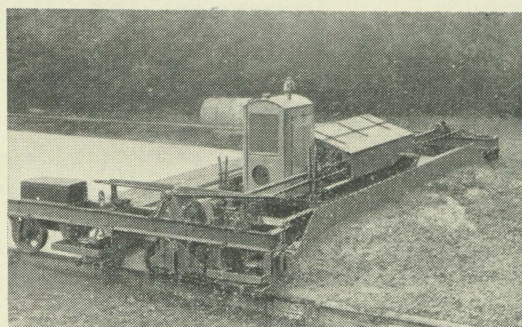
Sales Office

Alabama Power Building

**BIRMINGHAM, ALABAMA**

Capacity 1,500,000 bbls. annually

## A Map of the Country is a Map of ORD Achievement



The ORD Concrete Road Finisher has become so popular that a network of good roads covers practically every state. Through mountain passes, over sun-baked desert sands the ORD works faithfully day in and day out. On level stretches, around curves and up grades it never fails to turn out good roads—the kind that make the contractor's heart glad and swells his purse—and wins approval from the most particular inspector. Can you beat this for performance?

**A. W. French & Company**

*Manufacturers of the ORD Concrete Road Finisher*

8440 Lowe Avenue

Chicago, Ill.

# SLAG

**For any Type of Concrete Paving or  
Surface Treatment**

Our Woodward Plant (destroyed by fire July 6th, 1926) has been rebuilt with the most modern Crushing and Screening equipment. This new plant is producing a material unexcelled in correct and uniform sizing.

Our daily capacity from two plants is 3,000 tons, and in addition thereto, we have storage facilities for taking care of rush or emergency orders.

Write or telegraph for delivered prices.

**Woodstock Slag Corporation**

807-8-9 Southern Railway Building  
**BIRMINGHAM, ALABAMA**

## Julien P. Benjamin DISTRIBUTOR

Russell Graders—all sizes  
Monarch Tractors—The chain drive tractor  
The Foote Paver  
Heltzel Road Forms and Bins  
Russell Road Equipment  
Marsh-Capron Mixers—all sizes  
Heltzel Side Walk, Curb and Gutter Forms  
Sauerman Slack Line Cableways  
Clyde Iron Works Hoists  
Climax Engines and Parts  
Sauerman Power Drag Scrapers  
McKiernan-Terry Pile Hammers—steam  
and air  
"Dixoyl"—the perfect lubricant

**Stock and Parts Carried in Jacksonville**

**Julien P. Benjamin**  
**Construction Equipment**

Phone 5-0196

437 East Bay Street

JACKSONVILLE, FLORIDA



# Contracts Awarded by State Road Department January 1st, 1927, to May 20th, 1927

Contractor	Project No.	County	Length Miles	Length Feet	Contract Plus 10%	Type
Noonan-Lawrence	54	Leon	13.00	....	\$ 385,297.67	Concrete
Higgison Const. Co.	59	Leon-Jefferson	9.10	....	266,053.37	Concrete
Duval Engr. & Contr. Co.	54-A & 58	Leon-Jefferson	12.53	....	264,524.48	R. B. S. T.
Manley Constr. Co.	53-A	Lake	7.10	....	249,034.28	Asph. Conc.
W. J. Bryson Paving Co.	52	Escambia	10.089	....	241,904.49	C. G. & G.
Boone & Wester	677-C	Levy	10.16	....	224,345.88	C. G. & G.
Thompson & Moseley, Inc.	677-D	Levy	7.58	....	66,017.34	C. G. & G.
Lake Worth Const. Co.	683-C	Palm Beach	8.27	....	44,290.95	C. G. & G.
B. Booth & Co.	687-B	Lake	15.22	....	89,496.93	C. G. & G.
C. T. Dawkins	50-A	Putnam	....	120	22,243.32	Conc. Overhead
Okeechobee Const. Co.	655-667	Highlands	....	815	50,006.45	Timber
C. H. Turner Co.	697	Escambia	....	488	22,911.53	Timber
Duval Engr. & Contr. Co.	571	Madison	14.26	....	47,190.03	S. T.
Langston Const. Co.	660	Clay	10.52	....	33,538.07	S. T.
H. E. Wolfe	48	St. Johns	15.39	....	371,253.82	R. B.
Nelson Brothers	694	Marin	8.48	....	275,185.30	Concrete
Johnson, Drake & Piper	693	St. Lucie	8.93	....	312,662.92	Concrete
Concrete Steel Bridge Co.	665	Clay	....	1400	208,167.96	Concrete
Concrete Steel Bridge Co.	664	Clay	....	1600	236,366.90	Concrete
Royce Kershaw, Inc.	640-B	Martin	....	131	32,201.40	Concrete
F. M. Stuart & Co.	40-B	Brevard	....	108	40,149.91	Concrete
Langston Const. Co.	641	Palm Beach	9.67	....	188,279.21	R. B.
Samuel Vadner	695	Lake	10.50	....	63,734.69	C. G. & G.
Tampa Sand & Shell Co.	695	Lake	....	....	63,368.28	Hyd. Fill
R. C. Huffman Const. Co.	669-D	Dade	12.30	....	382,038.36	C. G. & G.
Deen, Yarborough & Ebersbach	685	Franklin	17.43	....	159,980.86	C. G. & G.
Wm. P. McDonald Const. Co.	648	Hardee	7.14	....	24,075.97	S. T.
L. M. Gray	676-A-B	Levy	24.35	....	80,637.57	S. T.
West Construction Co.	614	Sarasota	17.34	....	483,586.35	Bit. Conc.
Manley Construction Co.	687-A	Lake	15.00	....	436,551.76	Sheet Asph.
M. C. Winterburn, Inc.	543	Seminole	14.20	....	405,296.30	Bit. Mac.
Wm. P. McDonald Const. Co.	648	Hardee	6.36	....	123,804.83	R. B. S. T.
Duval Engr. & Contr. Co.	659	Clay	2.80	....	49,310.97	R. B. S. T.
C. A. Steed & Sons Co.	668	Brevard	13.45	....	373,640.32	R. B. S. T.
Stidham & Hughes	564-C	Charlotte	3.93	....	81,173.55	R. B. S. T.
H. L. Clark & Sons Co.	676-C	Levy	15.01	....	227,110.22	R. B. S. T.
F. X. Bradley & Co.	573-D	Orange	16.81	....	95,642.25	C. G. & G.
C. A. Henderson	713	Columbia	10.00	....	85,284.71	C. G. & G.
James Betteridge	41-B	Dade	....	88	42,387.84	Concrete
Peterson & Earnhart	698	Leon	....	400	34,773.06	Concrete
Peterson & Earnhart	699	Jefferson	....	300	27,441.17	Concrete
John J. Quinn, Inc.	641	Palm Beach	1.00	....	52,494.31	S. T.
Board Co. Commrs. Taylor Co.	745	Taylor	14.00	....	12,320.00	C. & G.
Finlayson & Morris	747	Jefferson	6.50	....	40,566.79	C. G. & G.
C. S. Maulsby	694	Martin	....	....	10,780.00	Protection
Kibbey Engineering Co.	663-679	Citrus-Hernando	15.00	....	19,145.28	Guard Rail
Alexander, Ramsey & Kerr	669-E	Dade	4.27	....	205,700.00	C. & G.
Langston Const. Co.	522	Nassau	4.06	....	43,394.76	R. B. S. T.
W. J. Bryson Paving Co.	593	Manatee	0.66	....	12,058.22	Bit. Conc.
E. W. Parker	589	Lee	....	313	43,942.63	Conc.
Murphy & Pryor	691	Indian River	....	285	60,594.05	Conc. Overhead
Hayes & Kroeger	687-A	Lake	....	120	18,264.37	Conc. Overhead
E. W. Parker	614	Sarasota	....	165	50,330.50	Conc. Bridge
E. W. Parker	614	Sarasota	....	150	61,320.42	Conc. Bridge
E. W. Parker	614	Sarasota	....	130	53,530.89	Conc. Bridge
E. W. Parker	614	Sarasota	....	130	68,210.17	Conc. Bridge
Cone Bros. Const. Co.	49	Flagler	13.81	....	252,196.06	R. B. S. T.
Fowler & Banko, Inc.	691	Indian River	5.52	....	165,364.35	Conc.
Fowler & Banko, Inc.	692	St. Lucie	7.38	....	229,002.48	Conc.
General Const. Co.	41-B	Dade	....	132	40,529.06	Conc. Bridge
F. X. Bradley & Co.	716	Bradford	11.12	....	57,024.85	C. G. & G.
F. X. Bradley & Co.	717	Bradford	10.93	....	85,834.62	C. G. & G.
Totals			441.15	6,875.0	\$8,493,565.08	





## SERVICE---That Speeds the Big Job Along

Service! that keeps every delivery promise. Insures steady progress day after day. That's one reason why most big jobs are

**"ENSLEY" & "ALA CITY"**  
**BASIC SLAG**  
CRUSHED & SCREENED

jobs. And here's another! Every shipment comes on the job prepared to meet the practical requirements of the particular type of paving in which it is to be used.

## Birmingham Slag Company

*Slag Headquarters for the South*  
Atlanta  
Thomasville  
**BIRMINGHAM**  
Montgomery  
Jacksonville  
Ocala, Fla.

**BASIC  
SLAG**

*For better  
Roads*

## The Contractors Equipment Co. OF FLORIDA

### DISTRIBUTORS

Rex Pavers—More yards per day  
Rex Mixers—all sizes  
Ord Concrete Road Finisher  
Ingersoll-Rand Compressors  
Ingersoll-Rand Tools and Hose  
Barnes Road Pumps  
Barnes Drainage Pumps.  
Jones Superior Saw Rigs  
Essick Plaster Mixers  
Syntron Electric Hammers and Tools  
Haiss Loaders and Conveyors  
Chain Belt Co.—Chains and Sprockets  
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Cable, Wheelbarrows, Carts, Shovels  
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We stock parts and can give service

Miami	West Palm Beach	Jacksonville
3-1571	Phones 7564	5-1861
Affiliated with McDonald & Burgman		

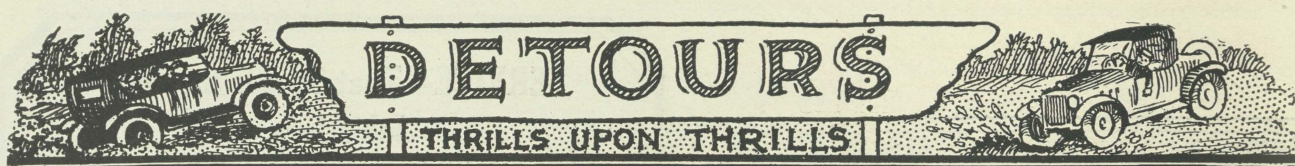
## Paving Funds Protected

Brick pavements have protected Florida's investments in paved streets and highways beyond all other materials. The brick pavement lasts long years after the bonds are paid off and forgotten.

## Southern Clay Manufacturing Company

Chattanooga  
Makers of Paving Brick for 35 Years  
Plants  
Robbins, Tenn., Coaldale and N. Birmingham, Ala.





A detour is the longest distance between two driven points.—Drexerd.

#### Choice of Fuel

"What, according to your view, is the burning question of the day?"

"Shall I eat or buy gasoline?"—Florida Times-Union.

#### Youthful Opportunist

A very small boy was trying to lead a big St. Bernard up the road.

"Where are you going to take that dog, my little man?" inquired a passer-by.

"I—I'm going to see where—where he wants to go first," was the breathless reply.—United Presbyterian.

#### Cold Weather Item

Pat and Mike stood before a store window wherein were placed trunks on sale.

Said Pat: "Moike, why dontcha buy a troonk?"

"What for and pray tell me?"

"To put your clothes in, you blithering ijit."

"What! and me go naked?"

#### Angel Footprints

A contractor who professed to be fond of children became very angry because some little fellow stepped on a new pavement before it was dry.

His wife rebuked him. "I thought you loved children," she said.

"I do in the abstract, but not in the concrete," he replied.

No domestic science course is necessary to enable a girl to make a traffic jam.—Florence Herald.

#### So Now We Know

The Egyptians developed writing in three stages, first they wrote symbols for the idea that they wanted to represent, for instance for a bee they made a picture of a bee; for a leaf a picture of a leaf. Then they combined both symbols and they expressed such an abstract thought as belief, a combination of "bee" and "leaf."—Student's examination paper for matriculation at an Eastern College.

#### Her Fine Memory

An elderly woman was boasting of her retentive memory. "My memory is excellent," she said. "There are only three things I can't remember. I can't remember names, and I can't remember faces, and I forget what the third thing is."

#### Speaking of Clocks

Jeweler—"This clock, madam, will run for eight days without winding."

Mrs. Newlywed—"No! Really, and how long will it run if you wind it?"

#### Wear Your Rubbers

The American Legion convention, it is announced, will be held in Paris (France) this year. Many who attend will do so out of sheer curiosity to see if it has stopped raining.—Life.

#### A Ribbon and a Smile

Husband—"That is a pretty sash for your new dress."

Wife—"Silly! That's the dress."

#### In Days of Old

When Noah sailed the ocean blue  
He had his troubles same as you;  
For days and days he drove the ark  
Before he found a place to park—Azuride.

#### Fair Warning

In a certain province liable to floods there is a notice on a low-lying road which reads:

"When this notice is under water this road is impassable."

That blonde? She's our latest widow—shot her husband because black's her most becoming color.—Columbia Jester.

#### Always Remember the Wife

At a community sale Monday, we met A. L. Kimberly, of Fabius, walking happily along with a chair in one hand and a hoe in the other. "I am careful never to forget the good wife at home," he said "After I had bid in this easy chair for myself, I was fortunate in finding this nice hoe for her." How fine it would be if all men were as thoughtful as our friend Kimberly.—Palmyra Spectator.

Rube: Do you use butter knives at your place?

Ben: No, but don't tell—you know how those things spread—Vassar Vagabond.

Thweet young thing: I want thome adhetive plathter.

Druggist: What thickness?

Th. Y. Th.: Don't mock me, thir!—Cincinnati Cynic.

Father: In spite of your poor work at school, I am going to give you a Ford coupe for Christmas. However, I am still displeased with you.

Son: Will you shake with me, Father?

Father: No; I refuse to place my foot in the dratted thing.—Pennsylvania Punch Bowl.

Customer: I want a pair of spec-rimmed hornicles—I mean sporn-rimmed hectacles—confound—I mean heck-rimmed spornacles.

Shopwalker: I know what you mean, sir. Mr. Perkes, show this gentleman a pair of rim-sporned hectacles—Texas Ranger.





ALABAMA POWER COMPANY  
BIRMINGHAM, ALA.



## Martin Dam at Cherokee Bluffs— Newest and Largest Power Source for Industrial Alabama

**I**N size, permanence and construction methods Martin Dam at Cherokee Bluffs has attracted international attention. In the construction of the power house and massive concrete dam across the Tallapoosa river

### ARROWHEAD SAND and GRAVEL

were used in both the mass and reinforced concrete sections. The 1900 ft. spillway, including 1244 ft. of concrete dam, was designed for an operating head of 150 ft.—including the superstructure it reaches an extreme height of 190 ft. The storage reservoir with more than 700 miles of shore line has a usable capacity of 60 billion cu. ft. of water.

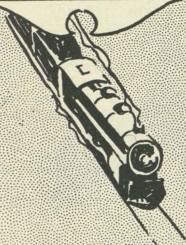
Daily and weekly laboratory tests were made—both of “mixes” and materials—to maintain a minimum strength of 2000 lbs. per sq. inch for the mass concrete and 3000 lbs. for the reinforced sections.

For more than twelve months the Dixie Construction Company (Birmingham) averaged 1,000 cu. yds. of concrete per day—during peak months construction exceeded 40,000 cu. yds. Our ability to sustain this schedule indicates the unusual production and shipping service it was necessary for us to maintain—without interruption.

### MONTGOMERY GRAVEL COMPANY

Offices: Shepherd Building, Montgomery, Alabama  
Plants: Arrowhead and Montgomery

**10,194  
CAR LOADS**  
of Arrowhead  
Sand and Gravel  
in this huge  
project. End-to-  
end a solid train  
67 miles long.  
This concrete  
poured, if in a  
16 ft. highway,  
would extend  
more than 435  
miles!





# Status of Construction

THROUGH MARCH 31, 1927.

Proj. No.	Contractor	Road No.	County	Total Length Miles	Clearing Miles	Grading Miles	Base Miles	Surface Miles	Type	Per Cent Complete
1	State Convict Forces	1	Okaloosa	6.08	0.00	0.00			G.	0.00
41	Morgan-Hill Paving Co.	4	Dade	12.00	12.00		11.64	11.40	S.A.	98.00
46	McMahan Const. Co.	3	Nassau	11.51				8.53	Conc.	67.00
47	J. B. McCrary Engr. Corp.	4	St. Johns	14.96				4.49	Conc.	30.00
48	H. E. Wolfe	4	St. Johns	15.39			7.01	0.00	S.T.R.B.	43.00
49	A. J. Hoffman	4	Flagler	13.81	13.82	11.75			Grading	90.00
50-A	Boone & Wester	14	Putnam	6.18	6.00	5.26			Grading	80.00
50-B	B. Booth & Co.	14	Putnam	9.78	9.78	9.78			Grading	95.00
50-C	E. Roy James	14	Putnam	10.03	10.03	9.03			Grading	90.40
52	W. J. Bryson Paving Co.	1	Escambia	10.09	2.32	1.01			Grading	14.30
53-A	B. Booth & Co.	2	Lake	7.11	7.11	7.11			Grading	100.00
53-A	Manley Const. Co.	2	Lake	7.10			4.61	0.00	B.C.	40.20
53-C	Tampa Sand & Shell Co.	2	Lake	1.87	1.59	.90			Grading	49.00
54	Noonan-Lawrence	1	Leon	13.00				.65	Conc.	5.70
58	Duva Engr. & Contr. Co.	1	Leon-Jefferson	12.53			6.27	0.00	S.T.R.B.	39.30
59	Higgison Const. Co.	1	Jefferson	9.10				2.46	Conc.	29.00
500-A	Noonan-Lawrence	20	Bay	9.65	9.65	9.65		9.25	Conc.	95.00
502	State Convict Forces	10	Gulf	7.50			0.00	0.00	S.T.R.B.	0.00
514	State Convict Forces	1	Jackson	11.04	11.04	11.04		11.04	S.C.	99.67
529	M. C. Winterburn, Inc.	1	Suwannee	12.70				8.23	Conc.	64.58
533	Baker & Foulks, Inc.	3	Suwannee	13.31			13.06	10.00	S.T.R.B.	95.00
543	Lake Worth Const. Co.	3	Seminole	14.20	14.20	13.49			Grading	90.00
543	M. C. Winterburn, Inc.	3	Seminole	14.20			0.00	0.00	B.Mac.	0.00
564-B	Broadbent Const. Co.	5	Charlotte	9.73			9.73	9.73	S.T.R.B.	100.00
564-C	E. F. Powers Const. Co.	5	Charlotte	3.94	3.94	3.94			Grading	100.00
564-C	Stridham & Hughes	5	Charlotte	3.74			0.00	0.00	S.T.R.B.	0.00
565	Johnson, Drake & Piper, Inc.	1	Madison	15.99				15.99	Conc.	100.00
571	Duval Engr. & Contr. Co.	1	Madison	14.26			14.26	4.28	S.T.R.B.	92.00
573-D	F. X. Bradley & Co.	9	Orange	16.81	0.00	0.00			Grading	0.00
580	State Convict Forces	19	Dixie	16.50	7.52	7.52	7.52	0.00	S.T.R.B.	45.50
587	C. G. Kershaw Const. Co.	5-A	Columbia	4.38	3.24	3.24			Grading	78.20
589	H. E. Wolfe	5	Lee	8.16			8.16	8.16	S.T.R.B.	100.00
590	State Convict Forces	1	Santa Rosa	9.28	0.00	0.00			G.	0.00
592	T. S. Fidelity & Guaranty Co.	10	Franklin	7.89	6.15	3.16			Grading	39.00
614	W. J. Bryson Paving Co.	5	Sarasota	17.34	17.07	14.51			Grading	80.00
614	West Construction Co.	5	Sarasota	17.34			0.00	0.00	B.Conc.	0.00
619	J. L. Gladwell	5	Alachua	9.28	8.35	6.59			Grading	73.30
621	Penton-Mathis Const. Co.	1	Okaloosa	19.64	19.64	19.05			Grading	98.00
623	State Convict Forces	35	Madison	12.91	12.91	12.78		0.00	S.C.	75.70
640-A	S. J. Groves & Sons Co.	4	Martin	9.00	8.82	2.88			Grading	51.00
640-B	Lake Worth Const. Co.	4	Martin	11.80	7.67	1.42			Grading	29.50
641	Chas. F. Wilmore	4	Palm Beach	11.36	11.36	11.36			Grading	100.00
641	Langston Const. Co.	4	Palm Beach	11.90			0.00	0.00	S.T.P.B.	0.00
648	Southern Surety Co.	2	Hardee	14.17	14.17	14.00			Grading	95.00
648	Wm. P. McDonald Const. Co.	2	Hardee	7.14			7.14	5.71	S.T.P.B.	95.00
648	Wm. P. McDonald Const. Co.	2	Hardee	6.36			0.00	0.00	S.T.R.B.	0.00
651	State Convict Forces	10	Gulf	14.72	14.72	12.25		1.00	S.C.	60.00
653	H. D. Spangler	4	Broward	13.46	8.75	2.02			Grading	23.00
657	State Convict Forces	6	Jackson	10.00	10.00	9.50		9.00	S.C.	90.00
659	M. C. Winterburn, Inc.	3	Clay	13.27	13.14	5.97			Grading	62.00
659	Duval Engr. & Contr. Co.	3	Clay	2.80			0.00	0.00	S.T.R.B.	0.00
660	Langston Const. Co.	3	Clay	10.52			9.57	0.00	S.T.R.B.	83.00
667	H. E. Wolfe	18	DeSoto	8.63	8.63	8.63	8.63	8.63	S.T.P.B.	100.00
668	E. F. Powers Const. Co.	4	Brevard	13.45	13.45	13.18			Grading	95.00
668	C. A. Steed & Sons Co.	4	Brevard	13.45			0.00	0.00	S.T.R.B.	0.00
669-C	R. C. Huffman Const. Co.	27	Dade	12.00	4.50	3.00			Grading	22.00
669-D	R. C. Huffman Const. Co.	27	Dade	12.30	0.00	0.00			Grading	0.00
669-V	Alexander, Ramsey & Kerr, Inc.	27	Collier	11.91	11.91	10.33			Grading	82.00
669-W	State Convict Forces	27	Collier	15.40	8.50	8.50	8.16	0.00	S.T.P.B.	55.00
671	State Convict Forces	20	Jackson	4.07	3.25	2.24			Grading	40.99
673	State Convict Forces	1	Gadsden	14.87	14.87	14.00		13.00	S.C.	95.00
674	Nelson Brothers	1	Duval	3.50	3.50	3.50		1.75	Conc.	70.90
676-A	L. M. Gray	19	Levy	9.96			8.26	.30	S.T.R.B.	70.00
676-B	L. M. Gray	19	Levy	14.39			5.76	1.58	S.T.P.B.	35.00
676-C	Langston Const. Co.	19	Levy	15.02		10.51			Grading	75.00
676-C	H. L. Clark & Sons Co.	19	Levy	15.02			0.00	0.00	S.T.R.B.	0.00
677-A	A. J. Hoffman	13	Levy	6.96	6.96	6.06			Grading	94.00
677-B	Coastal Const. Co.	13	Levy	11.58	8.68	3.94			Grading	44.00
677-C	Boone & Wester	13	Levy	10.16	3.04	0.00			Grading	14.50
677-D	Thompson & Moseley, Inc.	13	Levy	7.58	4.55	1.14			Grading	31.00
683-C	Lake Worth Const. Co.	14	Palm Beach	8.27	6.65	1.00			Grading	24.00
685	Dean, Varborough & Ebersbach	10	Franklin	17.43	3.62	1.38			Grading	5.23
687-A	E. W. Ellis	2	Lake	15.00	15.00	14.50			Grading	98.00
687-A	Manley Const. Co.	2	Lake	15.00			0.00	0.00	S.A.	0.00
687-B	B. Booth & Co.	2	Lake	15.22	8.37	4.87			Grading	35.80
691	Mason Payne Co., Inc.	4	Indian River	5.52	5.35	4.14			Grading	73.00
692	Boone & Wester	4	St. Lucie	7.38	7.38	7.38			Grading	69.00
693	Boone & Wester	4	St. Lucie	8.73	8.73	8.73			Grading	100.00
693	Johnson, Drake & Piper	4	St. Lucie	8.73				0.00	Conc.	0.00
694	Nelson Brothers	4	Martin	8.48				0.00	Conc.	0.00
695	S. Vadner & Tampa Sand & Shell Co.	2	Lake	10.54	0.00	0.00			Grading	0.00
698	Curtis & Gubbins	19	Levy	12.43	5.59	4.85			Grading	39.42
699	State Convict Forces	19	Levy	7.71	7.00	5.29			Grading	60.00
713	C. A. Henderson	28	Columbia	10.00	0.00	0.00			Grading	0.00
718	C. G. Kershaw Const. Co.	5-A	Columbia	8.22	7.81	7.81			Grading	95.10
721	L. M. Gray	3	Putnam	4.50	2.00	2.00	1.73	0.00	S.T.R.B.	40.00
745	Taylor County	19	Taylor	14.00	0.00				Clearing	0.00
747	Finlayson & Morris	35	Jefferson	6.50	0.00	0.00			Grading	0.00
771	J. B. McCrary Engr. Corp.	4	Duval	.59	.59	.59		.59	Conc.	100.00
Total complete March 31, 1927				1942.53	1859.64	850.75	1376.99			
Complete month of March				44.70	48.28	20.54	41.29			
Total complete February 28, 1927				1897.83	1811.36	820.21	1335.60			

## TOTAL MILEAGE COMPLETE

	Concrete	Brick	B. C.	S. A.	B. M.	Asph. Block	S. T.	S. C.	Marl	Total
Complete to February 28, 1927	157.55	17.13	11.23	77.57	88.84	23.20	609.10	407.74	27.58	1420.74
Complete month of March	16.58		2.85	.36			25.02	2.00		47.83
Complete to March 31, 1927	174.13	17.13	14.08	77.93	88.84	23.20	634.14	410.54	27.58	1468.57

NOTE: Types summarized as of January 1st, 1927



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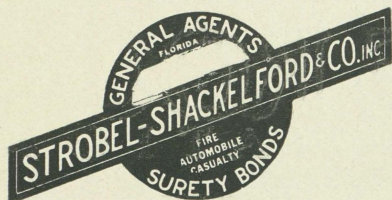
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